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*Ontario Hydro-Electric Inquiry
Commission, 1922-1924*

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HYDRO-ELECTRIC INQUIRY COMMISSION

INTERIM REPORT

THUNDER BAY SYSTEM

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:

Printed and Published by Clarkson W. James, Printer to the King's Most Excellent Majesty
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TORONTO

HYDRO-ELECTRIC INQUIRY COMMISSIONERS

W. D. GREGORY, Chairman.

M. J. HANEY.

LLOYD HARRIS.

J. ALLAN ROSS.

R. A. ROSS.

JOS. H. W. BOWER, Secretary.

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To His Honour, HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

Having been by Letters Patent directed to inquire into, consider and report upon, among other things, all power developments undertaken by the Hydro-Electric Power Commission of Ontario, and generally all matters of expenditure and administration by the said Commission;

FORT WILLIAM AND PORT ARTHUR.

Soon after we began our inquiry it was represented to us on behalf of the City of Fort William that a situation existed in the Thunder Bay District which urgently demanded our attention. Hearings were thereupon held by us at the Cities of Fort William and Port Arthur, and later at the City of Toronto. The work of our engineers and accountants in respect of the construction of the plant and the hydraulic features of the undertaking in the Thunder Bay District is not yet sufficiently advanced to enable us to report upon these subjects, but we are now in a position to report upon the other features of the undertaking and respectfully submit this report thereon. In our report we shall generally refer to the Hydro-Electric Power Commission of Ontario as the "Hydro-Electric Commission."

CONTRACTS WITH HYDRO-ELECTRIC COMMISSION.

In 1917 the Cities of Port Arthur and Fort William entered into the usual form of contract with the Hydro-Electric Commission whereby the Commission was authorized to construct or purchase works for the purpose of supplying power; each municipality binding itself to pay for the cost of the works by paying a rate for power which would include cost of operation, cost of renewals, interest on cost, the necessary sinking fund and all other charges.

Although the contracts came into force in March 1918, when they were ratified by the Legislature, Port Arthur did not begin to take power under the contract until December, 1920. Fort William is not under obligation to take power until August, 1926, when its contract with the Kaministiquia Power Company, a private corporation which generates power at Kakabeka Falls on the Kaministiquia River, west of Fort William, expires. Prior to the time when these contracts were entered into, the Hydro-Electric Commission had purchased power from the Kaministiquia Power Company for the City of Port Arthur. This contract would have expired in April, 1920, but was extended to the following December.

The price paid by the Hydro-Electric Commission to the Kaministiquia Power Company was fourteen dollars (\$14.00) per horse-power at 22,000 volts and the price paid by Port Arthur to the Hydro-Electric Commission was

approximately twenty dollars (\$20.00) per horse-power. The price paid by Fort William was twenty dollars (\$20.00) per horse-power at 2,200 volts.

PROPOSED SITE OF POWER DEVELOPMENT.

In the public discussion which took place prior to the submission to the voters, in January, 1917, of the by-laws authorising the contract between the municipalities and the Hydro-Electric Commission, the site of the proposed development was understood to be at Silver Falls, a point on the Kaministiquia River about fifteen (15) miles above the development of the Kaministiquia Power Company and known generally as Dog Lake. Estimates of the cost of power, based upon the Dog Lake development, were submitted by representatives of the Hydro-Electric Commission to Fort William and there is no doubt that the development at Dog Lake was the one in the minds of the electors when the vote was taken. Members of the staff of the Hydro-Electric Commission represented to the electors that the price of power, under the new contracts, would be substantially lower than it was under the then existing agreements with the Kaministiquia Power Company.

PUBLICATION OF ESTIMATES.

It is laid down in the Power Commission Act as a prerequisite to the making of a contract between the Hydro-Electric Commission and a municipality that:

"The Commission shallfurnish to the corporation a statement of the maximum price per horse-power at which electrical power or energy will be supplied,and an estimate of the cost of constructing or providing a transmission line"; and that "the provisional contract shall not be binding upon the corporation unless and until a by-law approving of the same has been submitted to and has received the assent of the electors qualified to vote on money by-laws; *and the estimates of the Commission or a summary thereof and a copy of the provisional contract shall be published with or form part of the by-law.*"

It was clearly the intention of the Legislature that the estimates and maximum price of power should serve as a basis of the contracts between the municipalities and the Hydro-Electric Commission. It appears, however, that the Commission almost from the beginning adopted a policy of disregarding the terms of the act. The municipalities of Fort William and Port Arthur were never furnished with estimates stating a "maximum price" nor were the estimates published with the by-law as required by the statute. On the occasion of the second vote in Fort William, the matter was the subject of communications between the Commission and the municipality in which the latter was advised by both the Secretary and the Chief Engineer of the Commission that:

"Estimates must not be included in the by-laws, but there is no objection to publishing the estimated figures and any other explanatory matters separate from the by-law. These matters are important."

The effect of not making the estimates a part of the by-law or publishing them with it probably was to render it impossible to hold the Hydro-Electric Commission legally responsible for them. If the estimates had been published with or formed a part of the by-law they might have afforded a ground for legal action if they were exceeded, while if they were omitted entirely, and the by-law later validated by the Legislature, this danger would be avoided.

Mr. Pope, the Secretary of the Hydro-Electric Commission, on being questioned by us, stated that the Hydro-Electric Commission adopted the policy of not publishing the estimates with the by-laws on the advice of counsel. The advice of counsel is in our opinion no justification whatever of the failure of the Commission to observe the plain terms of the Act. It is trustee for the municipalities and bound to protect their interests with scrupulous care. Its estimates formed the basis for the agreements and it should always have been willing to assume full responsibility for them.

CAMERON FALLS.

The by-laws having been adopted and the contracts between the two municipalities and the Hydro-Electric Commission having been signed and ratified, the next step was to begin work on the development. We have already pointed out that Dog Lake was the site that had been publicly announced, but it appears that before the announcement was made and the vote of the municipalities taken, the thoughts at least, of the Commission, had been directed to Cameron Falls on the Nipigon River, a water power that had long been the subject of contention between public and private interests. The minutes of the Hydro-Electric Commission of September 20th, 1916, state that:

"The question of the submission of estimates for the supply of power to Port Arthur from Nipigon and Silver Falls was discussed and the matter referred to the Attorney-General (Hon. Mr. Lucas) to ascertain what progress had been made in the matter of the leases of the power site on the Nipigon."

The minutes of the Commission for December 19th, 1916, contain Mr. Lucas' reply. They state:

"Commissioner Lucas assured the Board that the lease and option in connection with the Nipigon power situation had expired and the rights now rested in the Crown."

SALE OF PULPWOOD LIMITS.

At the time, however, that Honourable Mr. Lucas made this statement to the Hydro-Electric Commission an advertisement of the limits adjoining Cameron Falls had been published. The advertisement stated that:

"The successful tenderer shall be entitled to obtain a lease from the Crown upon the usual terms, of some suitable water power either within the territory now offered for sale, or at some other suitable point within the Province, as may be agreed upon between the successful tenderer and the Minister of Lands, Forests and Mines."

In response to this advertisement tenders were received from J. J. Carrick and S. A. Marks for the Pic River and Black Sturgeon limits, respectively. These tenders were accepted, and with the acceptance of these tenders the Government became responsible for providing water power for the purchasers of the limits.

They elected to take a water power site on the Nipigon River, and their selection appears to have been approved by the Government. Prior to the execution of the formal agreement in May, 1917, Marks had assigned his interest to Carrick who became the lessee of both limits.

When Sir Adam Beck found that the Government had given the right to a water power on the Nipigon River to the owners of the limits, he went to Sir William Hearst and protested against the action that had been taken and asked that the right given be cancelled. Sir William Hearst took the matter up with Carrick, and on October 15th, 1917, wrote to Sir Adam Beck that the only water powers available for the owners of the limits were those on the Nipigon River, and if the owners of the limits were excluded from the river they would have to secure power elsewhere. Sir William Hearst added that with the concurrence of the Commission he had assured Mr. Carrick that he could secure power from the Hydro-Electric Commission to operate any plant that he might erect. In another letter to Sir Adam Beck, dated June 4th, 1918, Sir William Hearst stated that:

"The Government was able to arrange with Mr. Carrick to release his rights to a lease of the necessary water powers on condition that the necessary power would be supplied to him by the Hydro-Electric Commission, and that the Government could not consider any plan for the development of the water powers at Nipigon without provision being made to supply the necessary power required for the operation of the plants demanded by the terms of the concessions in question."

On these conditions Mr. Carrick surrendered his rights to a water power on the Nipigon and the Hydro-Electric Commission went in and established its development there. The Commission was under no obligation to go to Nipigon. If it had not gone in, Mr. Carrick would have been at liberty to develop the water power on his own account. By going in and taking the water power for itself the Commission assumed an obligation to supply Carrick and his assignees with electric power necessary to operate any plant that might be erected to manufacture timber on their concessions.

These facts are of special importance in view of the position taken by Sir Adam Beck at the hearing before us that the Government had required the Hydro-Electric Commission to develop power at Nipigon and should therefore bear the large and increasing deficit arising from the present operation of the power plant erected there. The communications between the Government and Sir Adam Beck and Carrick are matters of public record.

The following is an extract from the evidence given before us by Sir William Hearst on the subject:

Q.—"It might appear to some people that it was the Government who took the initiative in asking the Hydro to go ahead with this development. Now, did the Government do that, or did the Hydro go to the Government?"

A.—"Oh, the Hydro came to the Government."

Q.—"The Hydro took the initiative?"

A.—"The Hydro took the initiative, yes."

COMMISSION SHOULD HAVE CONSULTED MUNICIPALITIES.

The Hydro-Electric Commission was trustee for the Cities of Fort William and Port Arthur, and these cities were, under the contracts entered into by them with the Hydro-Electric Commission, responsible for meeting the cost of the undertaking. If, therefore, Sir Adam Beck's contention that the Government

required the Hydro-Electric Commission to make a more expensive development on the Nipigon River in order to provide power for the owners of the limits, were well founded, it is clear that before entering upon this undertaking the Hydro-Electric Commission should have obtained from the Government an undertaking on its part to indemnify the Hydro-Electric Commission for the additional outlay it would have to make, both in construction and operation, through complying with the Government's request; or it should have obtained from the owners of the limits a firm agreement to take from the Hydro-Electric Commission such power as the Commission was required to provide for them. In the event of its not obtaining a guarantee from the Government or a fully secured contract from the owners of the limits, it should have declined to make the proposed development unless the municipalities of Port Arthur and Fort William, after having all the facts laid before them, had consented to its doing so. It was of especial importance that it should do so because its representatives, as we have already pointed out, had announced that the development would be made at Dog Lake, where the estimated cost was three million dollars (\$3,000,000.00) while the estimated cost at Nipigon was more than four times as great.

FUTURE TROUBLE.

A weak point in the situation from the standpoint of the Hydro-Electric Commission was that while it now became responsible for providing power for the owners of the limits, the owners of the limits were under no obligation to take power from the Commission. This fact led to much trouble in the future.

NO PROVISION MADE FOR LIMITS.

Before the final decision to establish the development at Cameron Falls was announced, Mr. Gaby, Chief Engineer for the Hydro-Electric Commission, submitted a report in which he made an estimate of the future demand for power, and recommended that the development be located at Cameron Falls. It is to be noted that in his calculations he did not include the requirements of Carrick or his successors in title to the Black Sturgeon and Pic River pulp limits, but based his recommendations on the prospective sale of power to other parties which he said a development at Dog Lake could not meet.

The attitude of the Hydro-Electric Commission is shown in a letter which, in the following September, while negotiations with Carrick were proceeding, Mr. Pope, the Secretary of the Commission, wrote to Mr. Carrick. In this letter Mr. Pope said:

"Unless the Commission receives a definite contract for the supply of power, it will be unable to consider future requirements you may desire to provide for."

No contract with the Commission was ever made by Carrick and it appears clear that the development at Cameron Falls was made without reference to the requirements of the owners of the Black Sturgeon and Pic River limits.

POWER FROM CAMERON FALLS.

Work on the development at Cameron Falls was begun by the Hydro-Electric Commission in December, 1918. The development progressed rapidly, and on December 20th, 1920, power from Cameron Falls was supplied by the

Hydro-Electric Commission to the City of Port Arthur. Mr. Gaby's estimates of a demand for from 25,000 to 30,000 h.p. were far from being reached. For the year that ended October 31st, 1921, the Hydro-Electric Commission had only two customers for power, the municipality of Port Arthur and the Nipigon Fibre & Paper Co., the latter being located at the mouth of the Nipigon River, about sixty miles north-east of Port Arthur. The total amount of power sold that year was 10,533.3 h.p.

EXTENSION GIVEN CARRICK.

The original contract between the purchasers of the Black Sturgeon and Pic River limits and the Government provided that development work was to be begun and \$400,000 expended upon the limits by May 9th, 1918; but in January, 1918, Honourable Howard Ferguson, then Minister of Lands, Forests and Mines, wrote to Carrick a letter in which he said:

"Of course it is quite true that power is the crux of the situation and I realise until this problem is solved it is impossible for you to make progress. Under these circumstances, and *until the power is available* (the italics are ours) the Department cannot fairly ask you to make the other expenditures in connection with the erection of your mills."

In May of the same year, the Hydro-Electric Commission not being in a position to furnish a supply of power, an extension of time for the development of the limits was granted. In this agreement it was provided that:

"The Grantee shall not be called upon or required to perform or enter upon the performance of the terms, conditions, duties or obligations, or any of them imposed or binding upon him, as in the said agreement (9th May, 1917) set forth, nor shall the payment and expenditures referred to in the said agreement or any of them accrue or be chargeable against the Grantee; nor shall the Grantee be deemed to be in any default whatsoever under the said agreement, until such time as an adequate supply of electrical power is made available for the Grantee sufficient for the operation of the mills provided for in the said agreement."

Under this extension agreement, therefore, the period within which operations were to be commenced by the concessionaires of the pulp limits was extended until such time as "an adequate amount of electrical power is made available."

SALE OF THE LIMITS.

Shortly after this extension was granted the Black Sturgeon and Pic River limits passed out of the hands of Carrick, having been sold by him to a corporation known as the Great Lakes Paper Company, Limited. Practically nothing had been done by Carrick upon the limits and nothing was done by his successors in title, the Great Lakes Paper Company, the Company taking the position that an adequate amount of power for the mills had not been made available and that until it was available they were not required to proceed with development work.

CONTENTION OF NEW OWNERS.

Various negotiations took place between the Ontario Government, the Hydro-Electric Commission and the Great Lakes Paper Company, and at one time it seemed likely that an agreement would be arrived at, whereby development work would be begun and power taken from the Hydro-Electric Commis-

sion, but in the end nothing came of the negotiations. The Great Lakes Paper Company not only took the ground that power was not available but that if power were available it was under no obligation to take it. It contended that it had an option to take power but was not compelled to exercise that option. In short, a situation that should have been foreseen from the beginning was now reached.

RESULT OF GOVERNMENT SUIT.

In May, 1920, the Honourable Mr. Raney, Attorney-General, on behalf of the Province of Ontario, brought an action against the Great Lakes Paper Company, Limited, for a declaration that the Great Lakes Paper Company was bound to take power from the Hydro-Electric Commission. This action was defended by the Company and tried by Mr. Justice Rose, who gave judgment against the Province. In his judgment he said:

"My conclusion is that there is no document which can be construed as containing an agreement on the part of Mr. Carrick (or his successors) to take power from the Government, through the Commission; that there is no justification for implying or inferring such an agreement on his part."

SHOULD THE GOVERNMENT HAVE CANCELLED LEASE?

Honourable Mr. Lucas, speaking for the Hydro-Electric Commission, took the ground before us that the Government should not have brought suit against the Great Lakes Company, but that it should have cancelled the concessions without invoking the powers of the Courts. The Government, no doubt, had power to cancel the concessions, and as it could not have been sued without its consent, it might have disregarded any legal or equitable claim of the Great Lakes Company. But would it have been wise or just to take such a course? Before bringing the action the Attorney-General submitted the matter to Mr. George H. Kilmer, K.C., Mr. C. S. MacInnes and Mr. Christopher C. Robinson, K.C., all of whom were acting or had acted for the Hydro-Electric Commission. In the opinion given by them, these gentlemen, in referring to the question as to whether the Legislature or the Government should act independently of the Courts, said:

"In our opinion, legislative or executive action to enforce this obligation (to take power) would not be justifiable."

Mr. Kilmer appears to have later expressed a different view, but this was after the matter had been submitted to the Courts, and it would, as the Attorney-General pointed out, have been manifestly improper for the Government, after having submitted the question to the Courts, to have refused to accept their decision.

A NEW AGREEMENT.

After the judgment of Mr. Justice Rose, the Government, in February, 1922, entered into a new agreement with the holders of the two limits, whereby the concessionaires agreed to spend four hundred thousand dollars (\$400,000) before February 9th, 1924, and two million dollars (\$2,000,000) before February 9th, 1925, in constructing pulp and paper mills and the necessary accessories. The clause in the former agreement, that power should be made available for the owners of the limits, is omitted from the new agreement; and as matters now stand, power or no power, the Great Lakes Paper Company has

to spend \$2,000,000 and perform other obligations before February 9th, 1925, or lose its property. Thus was settled for the time being, at least, the differences between the Government and the limit holders.

THE SALES OF POWER.

We have already stated that in the year ending October 31st, 1921, the Hydro-Electric Commission had only two customers, of which the Nipigon Fibre & Paper Company was one. The Nipigon Fibre & Paper Company had one failing—it never paid a single bill rendered to it by the Hydro-Electric Commission, and in October, 1921, it ceased operations. Shortly afterwards it went into bankruptcy and is still there. Among its liabilities is an account due the Hydro-Electric Commission of \$42,000. Fortunately the Hydro-Electric Commission has a bond of \$40,000 from a responsible guarantee company, so that nearly the whole of the debt up to October 31st, 1921, is likely to be recovered.

ONE CUSTOMER ONLY IN 1922.

During the year 1922 the Nipigon Fibre & Paper Company, according to the statements of the officers of the Hydro-Electric Commission made to us, is being billed for 3,067 h.p. at \$24 per horse-power, although it is taking no power. This claim is based on the agreement of the Nipigon Fibre & Paper Company to pay for a minimum amount of power whether taken or not. From evidence given before us by officials of the Hydro-Electric Commission, it appears that negotiations with new interests that may take over the plant of the Nipigon Fibre & Paper Company have been carried on with a view to getting them to assume the past obligations to the Hydro-Electric Commission, but no such agreement has been arrived at and the prospect of ever recovering any part of the account for 1922 appears to be remote. The City of Port Arthur is to-day the only customer of the Hydro-Electric Commission that is taking power from it in the Thunder Bay District.

STATEMENT FOR 1922

The year that ended on the 31st of last month is the first full year of operation of the development at Nipigon. The financial statement for the year is not yet complete, but Mr. G. T. Clarkson, the auditor of the Hydro-Electric Power Commission, has given us the statement of receipts and expenditures for the first nine months of the year and a careful estimate for the last three months. Mr. Clarkson's statement for the year which ended October 31st, 1922, is as follows:

Expenditure:

Operation (including direct maintenance and administration expenses).....	\$ 62,148.17
Water rental (based on 50c. per horse-power for power delivered to Port Arthur).....	4,388.00
Interest (on Nipigon development at 6.2%; and on original line and station, 4.5%).....	408,340.57
Reserve for renewals (on depreciable plant 1.023% of \$4,628,440.77).....	46,861.15
Reserve for contingencies (25c. per horse-power on power delivered to Port Arthur).....	2,194.00
Total operating charges.....	\$ 523,931.89

Revenue:

From Port Arthur (average load at \$25 per horse-power).....	\$ 219,409.28
From Nipigon Fibre & Paper Co. (75% previous maximum load).....	73,615.20
Total revenue	\$ 293,024.48
Deficit for the year.....	230,907.41

In his statement Mr. Clarkson places the amount that will be received from Port Arthur at \$219,409.28. This is estimated at \$25. per horse-power, whereas Port Arthur is paying only \$20 per horse-power, which is the rate that it paid before the construction of the Nipigon development. It refuses to pay more, and the Hydro-Electric Commission has promised it power at this rate on certain conditions. If Port Arthur should pay only \$20 per horse-power the receipts from that municipality would have to be reduced by \$43,881.86, and the net deficit would be increased by that amount. It will be noted that Mr. Clarkson places the receipts from the Nipigon Fibre & Paper Company at \$73,615.20. This Company, as we have already pointed out, is in liquidation and its prospects dark. No part of the item credited in respect of it has been paid and the full amount of the item should, in our judgment, be eliminated from the revenue—for the present at any rate. If the revenue were decreased by this amount, the deficit would be increased by an equal amount and would amount to \$304,522.61. If the power sold to Port Arthur be placed at \$20 per horse-power, \$43,881.86 more would have to be added to the deficit, making the total deficit for the year \$348,404.47. With these changes the statement for the year ended October 31st would be as follows:

Expenditure:

As per statement of Mr. Clarkson hereinbefore given..... \$ 523,931.89

Revenue:

From Port Arthur at \$20 per horse-power.....	175,527.42
Deficit for the year.....	\$ 348,404.47

NO SINKING FUND.

In the statement of expenditure no charge whatever is made for sinking fund, although the contracts with Port Arthur and Fort William provide that a forty-year sinking fund shall be established. We are advised that the Hydro-Electric Commission has no power to defer it; but whether deferred or not, it will have to be paid; if not now, then hereafter.

RATE OF INTEREST.

In a statement furnished to us by the Hydro-Electric Commission, the rate of interest payable by it to the Government in respect of the Nipigon Development has been placed at 5 per cent. We are informed by Sir Adam Beck and other officials of the Hydro-Electric Commission that about January, 1920, at a conference held with the Provincial Government regarding a certain contract for the sale of power then under discussion, it was suggested that

the Government reduce the rate of interest to 5 per cent. Sir Adam Beck and these officials state that this proposal was assented to by the Government. Honourable Mr. Drury and other members of the Cabinet, who appeared before us, state that the subject of interest was referred to casually and that there was no thought on the part of the Government of undertaking that the Province should pay any part of it. Mr. Drury stated that the Government had no right to lower the rate, the Legislature having conferred on it no power to do so.

The interest rate payable to the Government is dealt with in Sub-section 1a of Sec. 15 of the Power Commission Act, which reads as follows:

"The Commission shall pay to the Treasurer of Ontario annually interest on the indebtedness of the Commission to the Province for moneys advanced to the Commission by the Province as may from time to time be determined by the Lieutenant-Governor in Council as sufficient to reimburse the Province the full amount of interest paid by the Government on moneys raised for the purpose of the Commission and the charges incurred by it in providing such money."

Since 1917, when the statute was passed, the rate has been made up by the Government on the basis fixed by it.

Although Sir Adam Beck states that the arrangement to charge the Hydro-Electric Commission only 5 per cent. was made in January, 1920, it is clear that when the rate for 1920 was fixed at the end of that year it was fixed at 6.2 per cent. This rate was assented to without question by the Hydro-Electric Commission and cheque to cover it was given by the Hydro-Electric Commission to the Government. Apparently nothing was said, and certainly nothing was done, to suggest that the rate should be 5 per cent. until the end of October, 1921, or nearly two years after the alleged promise of a 5 per cent. rate was made. At the end of 1921 the interest statement as between the Government and the Hydro-Electric Commission was made up in due course at 6.5 per cent., the rate being based upon the statute. Instead of paying this amount, however, the Hydro-Electric Commission made up interest and other charges on the basis of 5 per cent. and charged back to the Government all interest and charges over 5 per cent. which had been paid by it to the Government in the years 1918, 1919 and 1920. This alleged overpayment which was charged by the Hydro-Electric Commission against the Government amounted to \$71,347.41. Whether or not the Legislature should make any reduction in the rate charged the Hydro-Electric Commission is a question for the Legislature to decide. It is clear that no reduction was made and the amount charged by the Government was the amount due to it by the Commission. Mr. Clarkson properly computes interest in his statement at the rate provided by law.

The Hydro-Electric Commission states that when it paid the interest to the Government at the end of 1921, one of its officials handed to the Assistant Provincial Treasurer a statement showing interest computed at 5 per cent. and making the deductions above referred to. The representatives of the Commission state that the Commission's cheque for the amount it claimed was due was received and that the account of the Commission, made up as above, was receipted by the Assistant Treasurer and that the Government has made no claim against the Commission since that time for any shortage. This statement is confirmed by testimony given before us by the Deputy Provincial Treasurer. The obvious and proper course would have been for the Assistant

Treasurer to have given credit for the amount paid and at once to have demanded payment of the balance. It seems remarkable that when there was a shortage of over \$70,000 in the payment the matter should have been allowed to rest and that no account should have been rendered to or demand for payment made upon the Hydro-Electric Commission since that time. The Deputy Provincial Treasurer did not even bring the matter to the attention of the Provincial Treasurer until a few months ago. It is not easy to comprehend why such laxity was shown, except on the ground that as the Hydro-Electric Commission is a department of the Government, the Deputy Treasurer assumed that its statements should be accepted as correct.

HOW TO MEET THE DEFICIT.

If the terms of the agreement between the Hydro-Electric Commission and the City of Port Arthur were carried out, Port Arthur would have to pay the entire deficit in the form of higher rates for power, but if it did so, its rate would be more than \$60 per horsepower—a rate which it is clear it could not pay. Mr. G. T. Clarkson, the auditor of the Hydro-Electric Commission, states that the Commission has no funds out of which to meet the deficit. Sir Adam Beck in reply to our inquiry as to how the deficit should be met, took the position that we have already described, and said:

“I think the Government is morally bound to assume that out and out altogether.”

Q.—“Assume it and pay it out of what?”

A.—“Out of the Treasury of the Province of Ontario.”

Mr. Gaby, the Chief Engineer, takes a different position as the following extract from his evidence shows:

Q.—“You would not suggest that the Government should take over this deficit and pay it off and not look to the System to make it good?”

A.—“No, I would not do that. I would say, in time the System should make good its deficit in the earlier years, and the statement we have prepared shows it will not be many years before it will be overtaken.”

Mr. Matthews, Mayor of Port Arthur, takes the same position as Mr. Gaby. He expresses the opinion that the System could and would substantially meet all its obligations if the Government would carry the present deficits in a suspense account. Mr. Morris, speaking for Fort William, expressed a different view. He said:

“The Province, we think, should write off or absorb a lot of the capital expenditure on that development.”

We have already stated our reasons for arriving at the opinion that no obligation to pay off or absorb the deficit rests upon the Government of Ontario. It did not request the Hydro-Electric Commission to make the development at Nipigon—the Commission made it of its own accord.

In the whole history of the Hydro-Electric Commission this is the first occasion on which it has stated that the municipalities for which it acts cannot meet the obligations undertaken by the Provincial Government on their behalf and that the deficit will have to be taken, as Sir Adam Beck puts it, “out of the Provincial Treasury.”

But from whatever cause the Nipigon Development came to this state, such is the state to which it has now come. The Hydro-Electric Commission cannot meet the deficit. The municipality of Port Arthur cannot carry the burden. There is only one other source to which to look and that is the Province of Ontario. It borrowed the money for the Hydro-Electric Commission. It signed the bonds; and willingly or unwillingly, it will have to meet the deficit. The obligation incurred by the Province for the Nipigon Development has proved to be a very real and a very serious one.

The deficit now existing is but a beginning. It will grow year by year and may reach a million dollars. It will, in our opinion, certainly reach close to three-quarters of a million. More capital must be advanced by the Province for additions to the plant to enable it to supply future demands for power. Its capacity now is about 25,000 h.p. Up to October 31st last, the Province had advanced for capital \$6,522,000. Mr. Gaby estimates that \$6,478,000 more, or \$13,000,000 in all, will be required to complete the work.

STUDY BY MR. FRANCIS.

Our consulting engineer, Mr. Walter J. Francis, C.E., has prepared for us a very clear and illuminating study of the economics of the Nipigon System. The results of the study show, as Mr. Francis points out, not only the present condition of the economics, but also the conditions which will result in the future according to the manner in which the variable factors may be dealt with. In preparing his diagrams, Mr. Francis has at our request taken, after consideration, the forecasts of power demand furnished to us by Mr. Gaby.

In diagram 5, prepared by Mr. Francis, it is assumed that the price for power to the municipalities is \$20 per horse-power and to pulp mills \$18 per horse-power; and that 50 cents per horse-power generated is paid to the Government for water rental, and that the interest rate on the capital expenditure is to be calculated at 6.2 per cent. per annum diminishing to 5 per cent., and the interest on the accumulated deficit at 5.5 per cent. per annum diminishing to 5 per cent. These conditions are the most favorable which we think they are justified in taking as a basis of calculation. The diagram shows that if these conditions are realized there will be an accumulated deficit which will in 1926 amount to over \$700,000 and will thereafter decrease and ultimately disappear in 1933. If the assumed conditions, including Mr. Gaby's estimates of the load, are not realized, the deficit will, of course, be larger and repayment longer deferred.

The revenue as shown in diagram 5 is predicated, as stated, on a rate of \$20 to the municipalities and \$18 to pulp mills. These rates, in our opinion, would be fair.

The study by Mr. Francis is attached hereto as appendix "A." A re-tabulation by him of the estimates of the Hydro-Electric Commission appears as appendix "B."

A CRITICAL PERIOD.

That there should be a deficit in the Thunder Bay System is not surprising. If a similar system had been constructed by private interests, provision would have had to be made to carry the undertaking over the period that there must nearly always be between construction and the time when power can be produced in paying quantities and sold at paying rates. No adequate provision

is made by the Power Commission Act for carrying the undertaking over this critical period. In our opinion a careful estimate made prior to construction would have shown that in all probability the undertaking would not be able to carry itself in its early stages. This probability should have been frankly stated to the Government by the Hydro-Electric Commission at the time when application was made for money for the undertaking. If, with this knowledge, the Government had decided to go on, it would have done so with its eyes open.

DEFICITS SHOULD BE CARRIED IN SUSPENSE ACCOUNT.

The deficits met by the Government should be carried in a suspense account and repaid to it by the Thunder Bay System as receipts from sale of power place it in a position to do so. That such a time will come we have no doubt—nor have we any doubt that the time will also come when the development at Cameron Falls will be insufficient to supply the requirements of Fort William, Port Arthur and the surrounding district.

SECURE CUSTOMERS FOR POWER.

No time must now be lost and no effort should be spared to secure customers for power. Negotiations for the sale of power have been carried on in the past by the Hydro-Electric Commission, but apparently in a half-hearted manner—at any rate they have been without result. From evidence given before us, it would appear that if both parties to the negotiations are prepared to make a fair contract, no insuperable obstacles will be found in the way. If a contract be made an early development should follow, and a large increase in revenue would be assured.

“ENFORCEABLE” CONTRACTS.

One of the reasons alleged for the failure of the negotiations referred to was that the purchasers of power could not procure an “enforceable” contract from the Hydro-Electric Commission. There were other terms in dispute between the parties, but these were trifling. In our opinion the question of enforceability should not be permitted to stand in the way of a contract being made. If there is any reasonable doubt as to whether such a contract is enforceable, the doubt should be set at rest by appropriate legislation.

FRUITLESS ERRANDS.

The municipalities themselves, upon whom the burden must ultimately rest, are deeply interested in promoting the sale of power. Month after month and year after year, deputation after deputation has come down, at great expense, from these cities to the Hydro-Electric Commission for the purpose of implementing any negotiations going on for the sale of power and bringing them to a successful conclusion. It is little wonder that representatives of the municipalities complain of having spent so much time and money on fruitless errands.

EQUAL TREATMENT FOR BOTH CITIES.

As between the cities of Port Arthur and Fort William, we feel that there ought to be complete equality of treatment by the Hydro-Electric Power Commission in the matter of both low-tension and high-tension power and without regard to the fact that Port Arthur is nearer the source of power. We find

that when the vote was taken there was a clear understanding as to this. The zone of equal rates should be extended to any improved lands contiguous to the municipalities, and there is much to be said in favour of laying down a general principle that in view of the responsibility for the Nipigon Development assumed by the cities of Port Arthur and Fort William, power should not be sold in any part of the Thunder Bay District at a lower rate than to Port Arthur and Fort William.

PROMPT AND EFFECTIVE ACTION IMPERATIVE.

The Provincial Government has now to carry the load and will have to carry an increasing load for some years to come. Under these conditions it is imperative that it co-operate to the fullest extent possible with the Hydro-Electric Commission to assure greater sales of power—for it is only by the sale of more power that the annual deficit can be reduced and revenue eventually made to balance expenditure. It should go further and insist that where it is possible to make a contract with responsible parties for the sale of power on fair and reasonable terms, nothing should be permitted to prevent such a contract being entered into. Other questions may wait, but a deficit that is growing at the rate of \$300,000 a year calls for prompt and effective action.

Dated November 15th, 1922.

(Sgd.) W. D. GREGORY,
Chairman.

(Sgd.) M. J. HANEY.

(Sgd.) LLOYD HARRIS.

(Sgd.) J. A. ROSS.

(Sgd.) R. A. ROSS.

Appendix A

NIPIGON SYSTEM. STUDY OF ENGINEERING ECONOMICS.

WALTER J. FRANCIS.

The present study of the engineering economics of the Nipigon System is made following the instructions of the Hydro-Electric Inquiry Commission. In commencing the study I was assisted by Mr. R. A. Ross and Mr. M. J. Haney, members of the Commission, and by Mr. J. H. W. Bower, the Secretary of the Commission.

While the problem cannot be solved precisely without the expenditure of an immense amount of time, nevertheless I believe that the results obtained are close enough for all practical purposes and that they show clearly not only the present conditions of the economics, but also the conditions which will result in the future, according to the manner in which the variable factors may be dealt with in one of the many different ways possible.

Briefly and in the most general terms, the study shows that if the plant be developed so as to supply the demand of a market for 70,000 horse-power by a definite plan of evolution by the year 1929 at a capital expenditure of \$13,000,000, and if \$20.00 per horse-power per annum be charged for power for municipal purposes and \$18.00 for pulp mill use, the accumulated deficit will disappear in the year 1939. Under the same development conditions the accumulated deficit will disappear in the year 1927 if the interest rate be taken at 5% per annum, and there be no charge for water rental. Similarly, with a maximum interest charge of 6.2% per annum and with a water rental of \$1.00 per horse-power per annum on power generated, the accumulated deficit will be ever increasing, when power for municipal purposes is sold at a rate varying between \$20.00 and \$18.00 per horse-power per annum. And, if the interest be fixed at 5% per annum and the water rental be placed at \$0.50 per horse-power per annum on power generated, the accumulated deficit will disappear in 1928. In a corresponding way, other results may be deduced from the diagrams according to the conditions selected.

GENERAL.

I have received the assistance of all the members of my staff as far as necessary, and particularly the aid of Mr. D. S. Ellis, M.A., formerly Professor of Mathematics at Queen's University.

The whole of the study has been based upon the information contained in the volume already submitted to the Hydro-Electric Inquiry Commission under the title, "Economics, Nipigon System, Estimates of Hydro-Electric Power Commission." (Appendix B.) The above-mentioned document consists

essentially of the data supplied by Mr. F. A. Gaby, Chief Engineer of the Hydro-Electric Power Commission, in answering our requests. His reply to a preliminary general inquiry was subsequently amplified, and is contained in the above-mentioned document. The references in the following explanation refer to the pages thereof.

The financial statement of the system for the year ending October 31st, 1921, as given by Mr. G. T. Clarkson, shows the capital expenditure to be \$6,347,705.45 if the rate of 5% per annum be taken for the interest charge during construction, or \$6,387,913.22 if 6.2% be taken, the difference due to the interest rate being \$40,207.77.

In Mr. Clarkson's figures given above an amount of \$115,452.67, being that invested for lines and station in the original system, is not included by us, since it is really apart from the "Nipigon System" under consideration. Mr. Gaby explains his view on page 42 of the above-mentioned document, as follows:

"The capital covered by the lines and station originally used to receive and distribute power purchased from the Kaministiquia Power Company have not been considered in the capital shown in the report, as negotiations have been going on for some time between the Public Utilities Commission of Port Arthur and the Hydro Commission covering the sale of these properties, and this report deals entirely with 'Nipigon Development Capital.'"

If the amount be considered as part of the capital expenditure, the earlier items of capital expenditure will be increased correspondingly, but the general results obtained in our study will not be materially altered in principle or in fact.

The total deficit of the system for the year ending October 31st, 1921, has been taken at \$64,849.00, the interest being computed at 6.2% per annum, and the water rental at \$1.00 per horse-power per annum for power sold; and at \$21,710.00, the interest being computed at 5% per annum, and the water rental at \$0.50 per horse-power per annum for power generated.

DIAGRAMS.

The results of the studies of Mr. Gaby's estimates have been shown on the eight drawings forming pages 23 to 30 hereof, as follows:

PAGE	SHEET	TITLE
23	1	Power Diagram.
24	2	Annual Revenue Diagram.
25	3	Profit and Loss Diagram.
26	4	Profit and Loss Diagram.
27	5	Profit and Loss Diagram.
28	6	Profit and Loss Diagram.
29	7	Profit and Loss Diagram.
30	8	Profit and Loss Diagram.

Sheet 1.

Sheet 1 is a Power Diagram for the Nipigon System covering the operation for the period between 1920 and 1931, inclusive. The years 1920, 1921 and 1922 are shown as under existing conditions. For the following years the loads are estimated. The basis of the estimate is given on page 34 of the above-mentioned document.

In analyzing page 34, and Mr. Gaby's amplification of it, we have plotted the uppermost of the three curves, being that marked "Power Sold." The lowest of the curves, being that marked "Municipal Load," represents a determination of the amount of power which it is estimated will be disposed of for municipal purposes. The centre curve, marked "Power Generated," has been deduced from a consideration of the diversity factor, having regard to the power sold and to the power generated, year by year.

It should be noted in passing that the estimated loads for the period from the year 1923 to 1931 are based on communications in the files of the Hydro-Electric Power Commission, and the Hydro-Electric Power Commission's interpretation of the whole situation.

Sheet 2.

Sheet 2 has been made to show Annual Revenue derivable from three different bases of selling rates. The curve marked "A," being that shown in dots, indicates the revenue, year by year, on the assumption that the power for municipal purposes is sold by the Hydro-Electric Power Commission at \$20.00 per horse-power per annum for the years 1921, 1922, 1923 and 1924; at \$19.00 for the years 1925, 1926 and 1927; and at \$18.00 for the years 1928, 1929 and 1930; and that the power for pulp mill use is sold at the uniform rate of \$18.00 per horse-power per annum.

The curve marked "B," being that shown in short dashes, is drawn on the assumption that all power used for municipal purposes is sold for \$20.00 per horse-power per annum; and all power for pulpmill use at \$18.00 per horse-power per annum.

The curve marked "C," being that shown in long dashes, is a plot of the revenue as set out on page 36 of the above-mentioned document, in which the actual revenue has been plotted for the year 1921; the rate of \$25.00 per horse-power per annum for power for municipal purposes is used for 1922; \$20.00 for power for municipal purposes for the years 1923, 1924, 1925, 1926 and 1927; \$16.00 for the year 1928; and \$15.00 for succeeding years; \$18.00 per horse-power per annum being the constant rate for power for pulpmill use. In connection with this curve it should be stated that the distribution of the power on page 36 of the above-mentioned document varies from that given on Sheet 1, in reference to the amount of power to be sold for pulp mill use.

Sheet 3.

Sheet 3, like the five which follow it, is a Profit and Loss Diagram.

It differs from the succeeding sheets only in the different rates for the sale of power, the rental for water and the rate of interest. As a result of the basis for the sale of power, the water rental and the interest charges used in its computation, Sheet 3 may be said to represent the extreme upper limit of those conditions, namely \$20.00 per horse-power per annum for power for municipal purposes for the years 1922, 1923 and 1924; \$19.00 for the years 1925, 1926 and 1927; and \$18.00 for the years 1928, 1929 and 1930; and \$18.00 per horse-power per annum for power for pulp mill use, throughout. Water rental to be paid by the Hydro-Electric Power Commission is considered on the basis of \$1.00 per horse-power per annum for power sold up to 70,000 horse-power; interest has been taken on the capital expenditure at 6.2% per annum for the

years 1921, 1922 and 1923; at 5.5% per annum for the year 1924; and at 5% per annum thereafter. Interest on the deficit has been computed at 5.5% per annum for the years 1922, 1923 and 1924, and at 5% per annum thereafter.

Throughout the computations interest has been compounded annually.

The uppermost curve shows the Total Operating Expense, year by year. The next succeeding curve shows the Total Revenue, year by year, while the curve below the datum line indicates the Accumulated Deficit, year by year.

In calculating the curve of total operating expense, page 52 of the above-mentioned document has been used as a basis in regard to operation, maintenance, administration, water rental, interest, sinking fund, contingencies and depreciation. In all cases the figures of the Hydro-Electric Power Commission have been accepted unless we believed there were good reasons for modifying them in which case the reason is given. Referring to page 52, the figures of operation have been taken as therein stated, understanding that they are based on the operation records of the Hydro-Electric Power Commission. Maintenance has also been taken as given on page 52, because when combined with the items under the head of depreciation, on the same page, the results appear reasonable. The items under the head of administration, on the same page, are taken as there given, understanding that they are based on the records of the Hydro-Electric Power Commission. The annual charges for water rental, as given on page 52, have been modified in all cases, the basis for Sheet 3 being that of \$1.00 per horse-power per annum for all power sold up to 70,000 horse-power. The items of interest, on page 52, have been modified in the manner explained for the Profit and Loss Diagrams, sheet by sheet. The items of the sinking fund, as given on page 52, have been accepted for use in the computations, being considered sufficiently accurate.

We have considered the capital expenditure at the end of the fiscal year, October 31, to be as follows:

1921.....	\$ 6,387,913.22
1922.....	6,562,207.77
1923.....	6,562,207.77
1924.....	9,150,000.00
1925.....	10,056,000.00
1926.....	11,718,000.00
1927.....	12,870,000.00
1928.....	12,870,000.00
1929.....	13,000,000.00
1930.....	13,000,000.00

The figures for capital expenditure for the year 1924 and for subsequent years, have been used as given by the Hydro-Electric Power Commission on page 35 of the above-mentioned document, as they appear to be sufficiently large.

The item of interest thereon has been taken at 6.2% per annum for the years 1921, 1922 and 1923, following at the same rate on the 1923 capital expenditure to the end of 1930. Interest for the year 1924 has been taken at 5.5% per annum on the capital expenditure for that year, and at the same rate on the amount of the increase as between 1923 and 1924, continuing to the end of 1930. The interest on all capital expenditure added for the year 1925 and thereafter has been computed at 5% per annum. On the deficit, interest has been computed at the rate of 5.5% per annum for the years 1922, 1923 and 1924, and at 5% per annum thereafter.

The conditions assumed for Sheet 3 are the most unfavourable on which we have based our calculations, from the viewpoint of the Nipigon System. The accumulated deficit increases year after year, and will not be overcome within the period of time under consideration.

Sheet 4.

Sheet 4 is in the same form as Sheet 3 and is comparable therewith, excepting that the rate for power for municipal purposes has been chosen at \$20.00 per horse-power per annum; the rate for power for pulp mill use has been taken at \$18.00 per horse-power per annum; water rental has been taken at \$1.00 per horse-power per annum for power sold up to 70,000 horse-power; while interest has been taken exactly as for Sheet 3.

The conditions under which this table has been calculated are more favourable to the System than the conditions assumed for Sheet 3, and while the former shows that the accumulated deficit will continue to increase, Sheet 4 shows that the accumulated deficit will disappear about the year 1939 under its assumed conditions.

Sheet 5.

Sheet 5 is calculated on the same principle as Sheet 4. The same rates for the sale of power have been assumed, and the same interest rates have been used, but the water rental is assumed to be \$0.50 per horse-power per annum for power generated up to 50,000 horse-power.

Sheet 5 shows that the results are more favourable than in either of the previous sheets, and that the accumulated deficit will disappear in the year 1933 under its assumed conditions.

Sheet 6.

Sheet 6 is calculated on the same principle as Sheet 5, the only difference being that 5% per annum has been used as the rate of interest throughout.

Sheet 6 shows the accumulated deficit disappearing in the year 1928 under its assumed conditions.

Sheet 7.

Sheet 7 has been calculated on the same principle as Sheet 6, with the differences that the rate of \$0.50 per horse-power per annum for water rental has been taken on power sold with a limit of 70,000 horse-power; and that the rate for power for municipal purposes diminishes from \$25.00 down to \$15.00, as given on page 36 of the above-mentioned document.

Sheet 7 shows the accumulated deficit disappearing in the year 1926 under its assumed conditions.

Sheet 8.

Sheet 8 has been calculated on the same principle as Sheet 7 with the differences that power for municipal purposes has been taken at a constant selling rate of \$20.00 per horse-power per annum; power for pulp mill use at a

constant rate of \$18.00 per horse-power per annum; that there are no charges for water rental; and that all interest has been computed at 5% per annum.

Sheet 8 shows the accumulated deficit disappearing in the year 1927 under its assumed conditions.

This curve is calculated for the most favourable set of conditions which we have considered, with the single exception of the rate of \$25.00 per horse-power per annum at the commencement as given by the Hydro-Electric Power Commission on page 36 of the above-mentioned document.

TABLE OF ACCUMULATED DEFICITS.

As a résumé of the principal features of the items of accumulated deficit in the diagrams, and for the sake of easy reference, the following figures are taken from the calculations on which the diagrams are based:

Conditions as in Sheet	Maximum Amount	Accumulated Deficit Year	Accumulated Deficit Ends
3.....	\$929,404.....	1928	(accumulated deficit increases)
4.....	843,714.....	1927.....	1939 (about)
5.....	708,297.....	1926.....	1933
6.....	263,593.....	1924.....	1928
7.....	97,063.....	1924.....	1926
8.....	232,693.....	1924.....	1927

CONCLUSION.

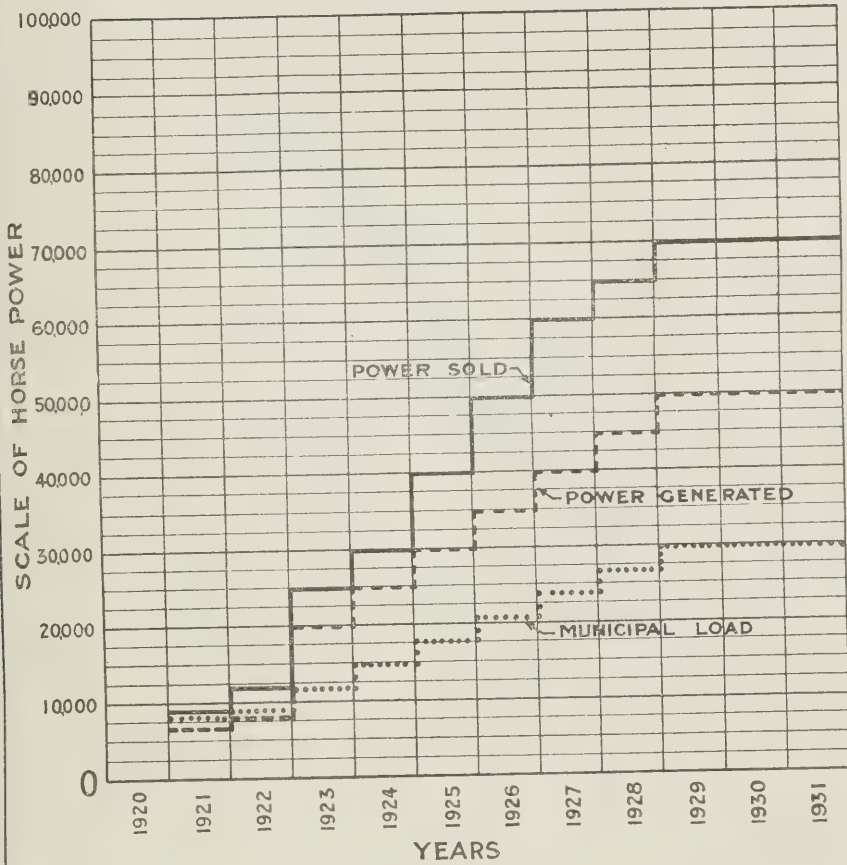
Speaking briefly, Sheets 3, 4, 5, 6, 7 and 8 are Profit and Loss Statements, under certain assumed conditions in stated combinations. The varying conditions are a municipal selling rate diminishing from \$25.00 per horse-power per annum to \$15.00 per horse-power per annum; a rate of interest varying between 6.2% per annum and 5% per annum; and a water rental varying between \$1.00 per horse-power per annum for power sold up to 70,000 horse-power, and no charge for water rental.

In those cases where the figures of the Hydro-Electric Power Commission in the volume containing the estimates thereof have been accepted as accurate for the purpose in hand, little or no effect would appear in the results which we have obtained by adjustments which, conceivably, might be made in the original figures. Therefore, as no useful purpose would be served, no attempt has been made to adjust the figures, and I believe the results obtained are sufficiently accurate for all practical purposes.

WALTER J. FRANCIS,
Consulting Engineer.

Toronto, September 18th, 1922.

POWER DIAGRAM

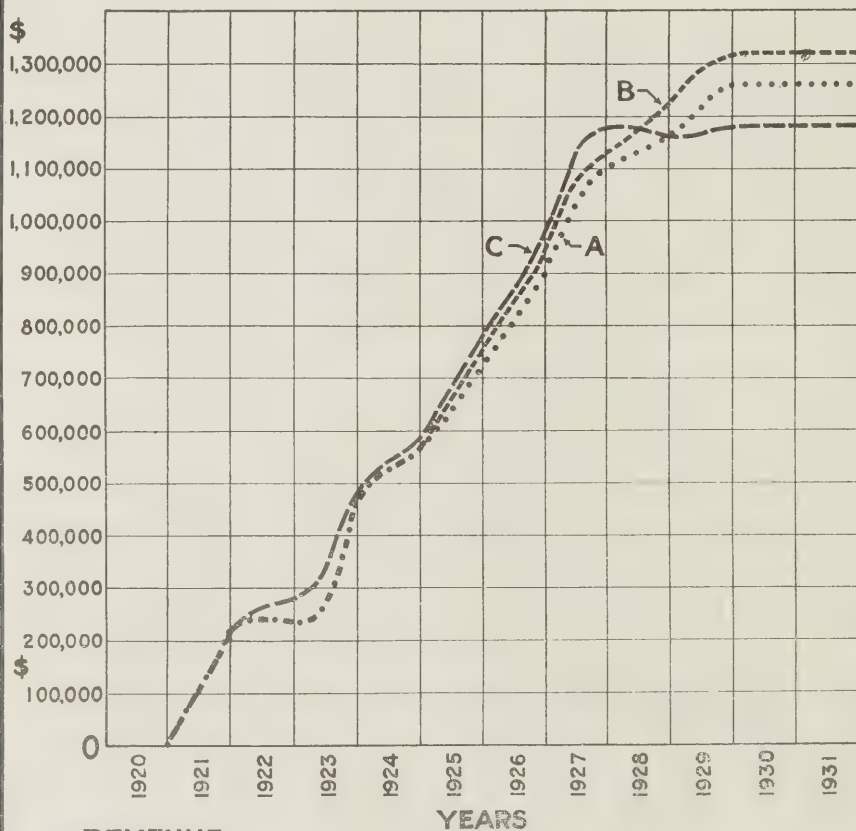


SHEET I

HYDRO-ELECTRIC INQUIRY COMMISSION
W. D. GREGORY-CHAIRMAN
NIPICON SYSTEM
— STUDY OF —
ENGINEERING ECONOMICS
(EIGHT SHEETS)

Toronto, Sep. 14th, 1922. Made by *WJF*, Checked by *WJF*.
WALTER J. FRANCIS, C. E.
CONSULTING ENGINEER

ANNUAL REVENUE DIAGRAM



REVENUE

Selling Rate -

Curve A, Municipal Power \$20 per H.P.
per Annum diminishing to \$18
Pulp Mill Power \$18 per H.P.

Curve B, Municipal Power \$20 per H.P.
Pulp Mill Power \$18 per H.P.

Curve C, Municipal Power \$25 per H.P.
per Annum diminishing to \$18
Pulp Mill Power \$18 per H.P.

SHEET 2

HYDRO-ELECTRIC INQUIRY COMMISSION

W. D. GREGORY - CHAIRMAN

NIPIGON SYSTEM

- STUDY OF -

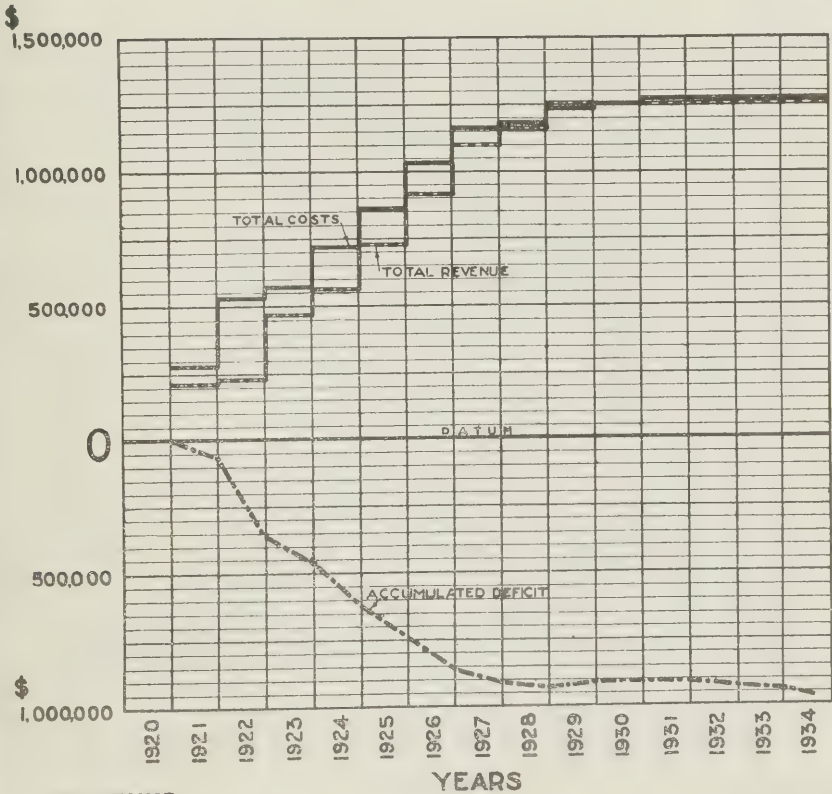
ENGINEERING ECONOMICS

(EIGHT SHEETS)

Toronto, Sep. 14th, 1922. Made by ~~SEA~~, Checked by ~~SEA~~.

WALTER J. FRANCIS, C.E.
CONSULTING ENGINEER

PROFIT AND LOSS DIAGRAM



REVENUE

Selling Rate - Municipal Power \$20 diminishing to \$18
Pulp Mill Power \$18

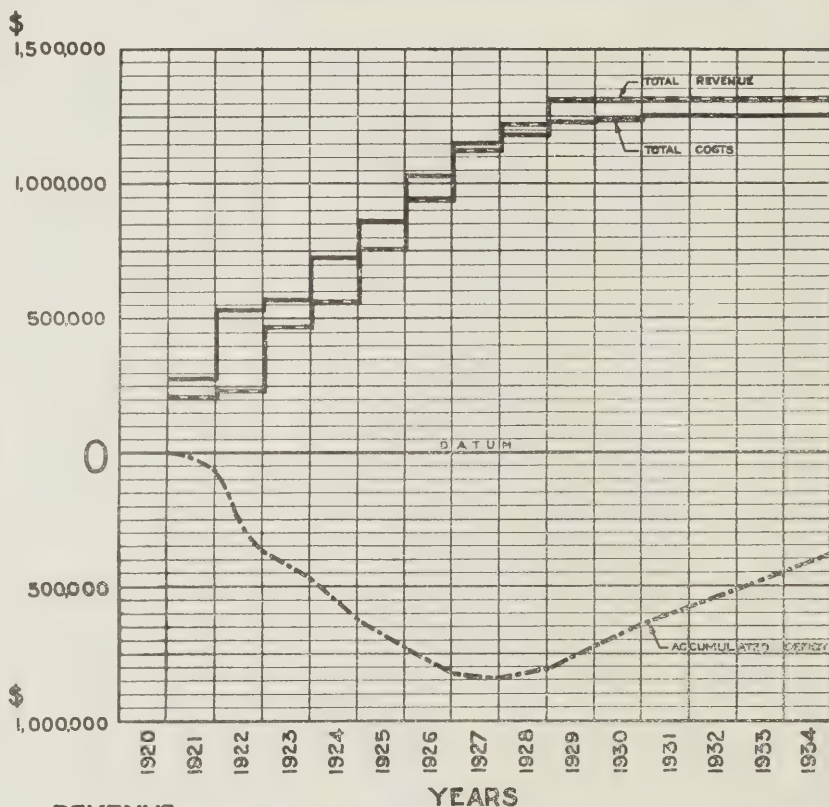
EXPENSE

Water Rental - \$1 per H-P per Annum
for Power Sold. Limit 70,000 H-P
Interest - On Capital - 6.2% per Annum
diminishing to 5%
On Deficit 5.5% per Annum
diminishing to 5%

SHEET 3

HYDRO-ELECTRIC INQUIRY COMMISSION
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CONSULTING ENGINEER

PROFIT AND LOSS DIAGRAM



REVENUE

Selling Rate - Municipal Power - \$20
Pulp Mill Power - \$18

EXPENSE

Water Rental - \$1 per H.P. per Annum
for Power Sold. Limit 70,000 H.P.
Interest - On Capital - 6.2% per Annum
diminishing to 5%.
On Deficit 5.5% per Annum
diminishing to 5%.

SHEET 4

HYDRO-ELECTRIC INQUIRY COMMISSION

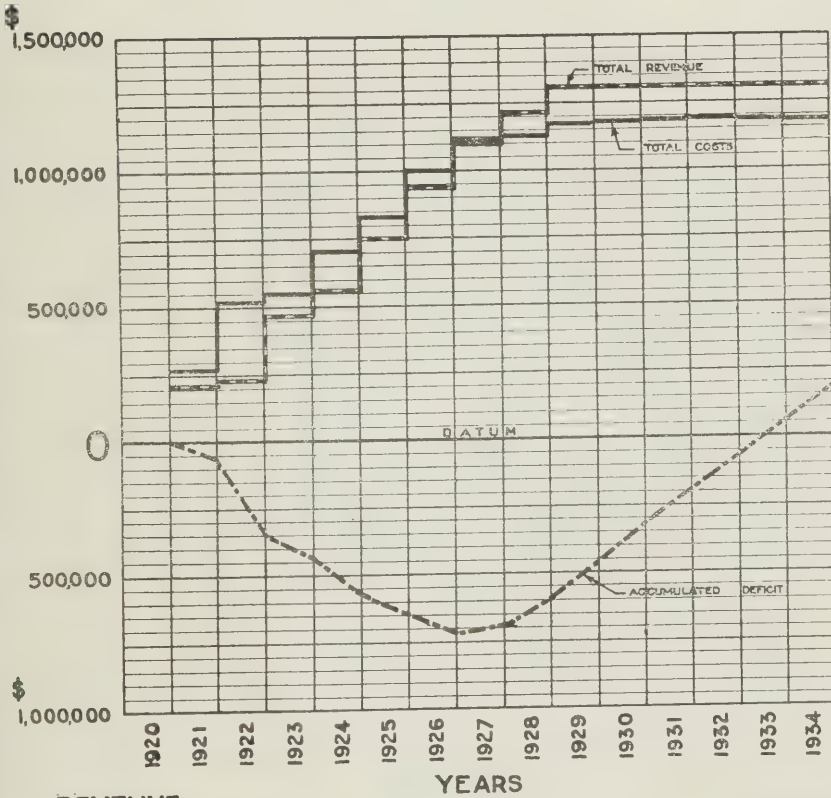
W. D. GREGORY - CHAIRMAN

NIPICON SYSTEM

**— STUDY OF —
ENGINEERING ECONOMICS**
(EIGHT SHEETS)

Toronto, Sep. 14th, 1922. Made by *WJF*, Checked by *WJF*
WALTER J. FRANCIS, C.E.,
CONSULTING ENGINEER

PROFIT AND LOSS DIAGRAM



REVENUE

Selling Rate - Municipal Power \$20
Pulp Mill Power \$18

EXPENSE

Water Rental - \$0.5 per H.P. per Annum
for Power Generated. Limit 50,000 H.P.
Interest - On Capital - 6.2% per Annum
diminishing to 5%
On Deficit 5.5% per Annum
diminishing to 5%

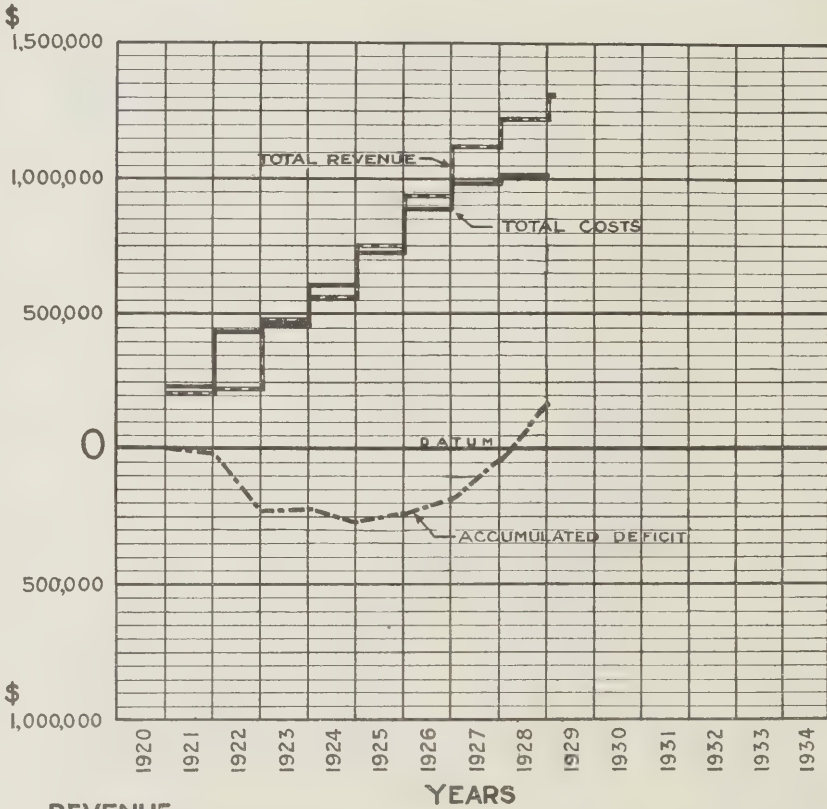
SHEET 5

HYDRO-ELECTRIC INQUIRY COMMISSION
W.D. GREGORY - CHAIRMAN

NIPIGON SYSTEM
— STUDY OF —
ENGINEERING ECONOMICS
(EIGHT SHEETS)

Toronto, Sep. 14th, 1922, Made by S.F.H., Checked by W.D.G.
WALTER J. FRANCIS, C.E.
CONSULTING ENGINEER

PROFIT AND LOSS DIAGRAM



REVENUE

Selling Rate - Municipal Power - \$20
Pulp Mill Power - \$18

EXPENSE

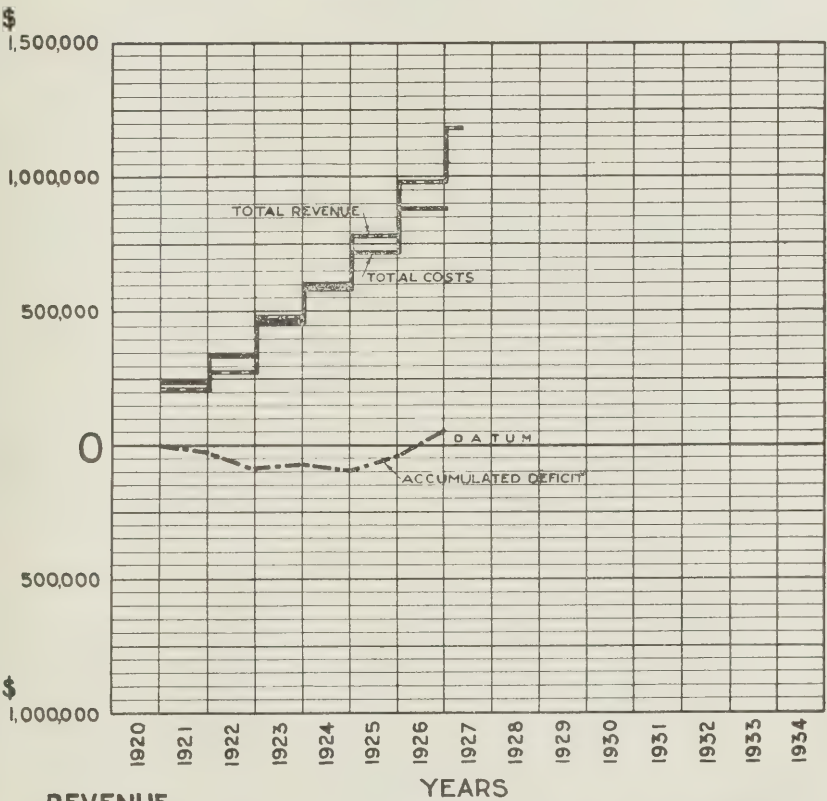
Water Rental - \$0.5 per H.P. per Annum
for Power Generated, Limit 50,000 H.P.
Interest - On Capital - 5% per Annum.
On Deficit - 5% per Annum.

SHEET 6

HYDRO-ELECTRIC INQUIRY COMMISSION
W.D. GREGORY - CHAIRMAN
NIPICON SYSTEM
— STUDY OF —
ENGINEERING ECONOMICS
(EIGHT SHEETS)

Toronto, Sep. 14th, 1922. Made by *WJF*, Checked by *WJF*
WALTER J. FRANCIS, C. E.
CONSULTING ENGINEER

PROFIT AND LOSS DIAGRAM



REVENUE

Selling Rate - Municipal Power - \$25 diminishing to \$15
Pulp Mill Power - \$18

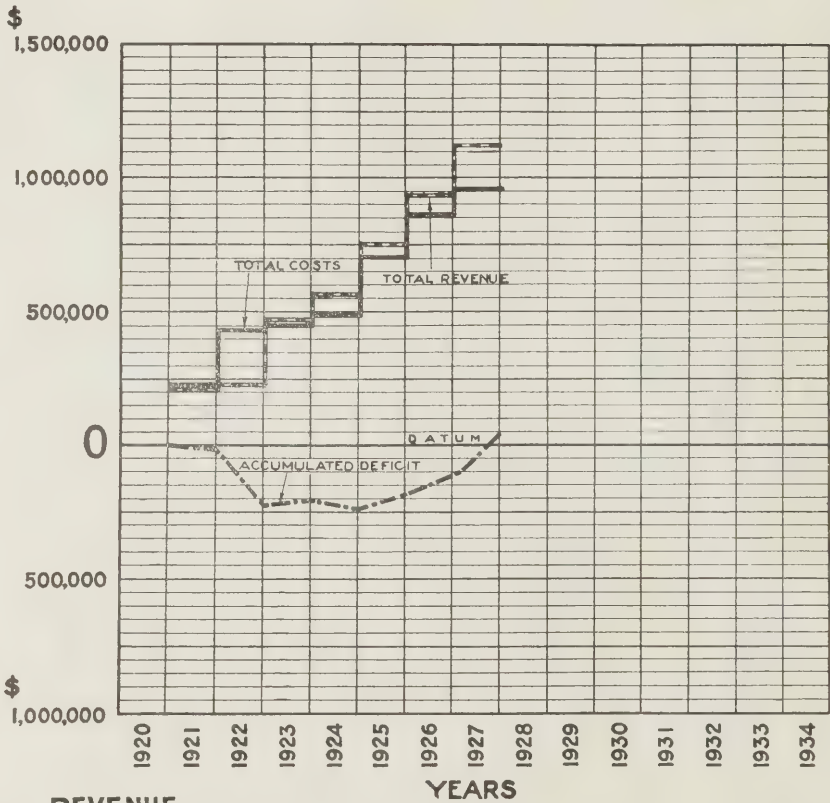
EXPENSE

Water Rental - \$0.5 per H.P. per Annum
for Power Sold. Limit 70,000 H.P.
Interest - On Capital - 5% per Annum.
On Deficit - 5% per Annum.

SHEET 7

HYDRO-ELECTRIC INQUIRY COMMISSION
W. D. GREGORY - CHAIRMAN
NIPIGON SYSTEM
— STUDY OF —
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Toronto, Sep. 14th, 1922. Made by *WJF*, Checked by *WJF*
WALTER J. FRANCIS, C. E.
CONSULTING ENGINEER

PROFIT AND LOSS DIAGRAM



REVENUE

Selling Rate - Municipal Power - \$ 20
Pulp Mill Power - \$ 18

EXPENSE

Water Rental - Gratis.
Interest - On Capital - 5% per Annum.
On Deficit - 5% per Annum.

SHEET 8

HYDRO-ELECTRIC INQUIRY COMMISSION
W.D. GREGORY - CHAIRMAN
NIPICON SYSTEM
— STUDY OF —
ENGINEERING ECONOMICS
(EIGHT SHEETS)

Toronto, Sep. 14th, 1922. Made by *W.J.F.*, Checked by *W.D.G.*
WALTER J. FRANCIS, C.E.
CONSULTING ENGINEER

Appendix B

ENGINEERING ECONOMICS—NIPIGON SYSTEM.

WALTER J. FRANCIS.

This document in its present form is intended to embrace all the documents in connection with the economics of the Nipigon System from July 19th, 1922, to September 1st, 1922.

On July 20th, 1922, I received the following letter from Mr. Commissioner R. A. Ross:

(Letterhead—Hydro-Electric Inquiry Commission)

TORONTO, ONT., 19th July, 1922.

WALTER J. FRANCIS, ESQ.,
Consulting Engineer, Hydro-Electric Inquiry Commission,
110 Elm Street,
Toronto, Ontario.

DEAR SIR:

In order to determine a flat rate for horse-power for a period of years which may be acceptable to the power users who are in control of the situation, the Commission desires to have an authoritative statement from the Hydro-Electric Power Commission covering the economics of the whole situation at Fort William and Port Arthur in its relation to the Nipigon plant, which will enable them to decide on such a price as will attract large users of power and at the same time, if possible, clear up the deficits of the earlier years with the profits of later years.

With this end in view a letter should be written by you to the Hydro-Electric Power Commission asking for a statement covering the following:

1. Loads which might reasonably be anticipated on the Nipigon plant for each year for, say 15 to 20 years;
2. The capital investment in generating plant, transmission lines, sub-stations, etc., to serve such demand;
3. All operating and fixed charges year by year to cover such demand;
4. The cost per horse-power at Fort William and Port Arthur on the above basis;
5. The revenue to be derived from the sale of power under the above conditions;
6. The deficits accumulated year to year by years during the period of deficits;
7. The anticipated profits available to wipe out said deficits during later years;
8. Under the above conditions the deficits and profits to be anticipated from continued flat rate during the entire period at \$15.00, \$17.50 and \$20.00 per horse-power at Fort William and Port Arthur.

Yours truly,

(Signed) R. A. Ross.

This letter I duly acknowledged, and in accordance with the request I addressed the following letter to Mr. Gaby:

Room 411, 110 Elm St.,

TORONTO, ONT., July 20th, 1922.

F. A. GABY, Esq.,

Chief Engineer, The Hydro-Electric Power Commission,
190 University Avenue,
Toronto, Ont.

RE ECONOMICS—NIPIGON PLANT

DEAR SIR:

The Hydro-Electric Inquiry Commission has requested me to ask you if you will be so kind as to furnish the following information covering the economics of the situation at Fort William and Port Arthur in relation to the Nipigon Plant. A statement by you covering the following points will doubtless suffice:

1. Loads which might reasonably be anticipated on the Nipigon Plant for each year for, say, 15 to 20 years;
2. The capital investment in generating plant, transmission lines, sub-stations, etc., to serve such demand;
3. All operating and fixed charges year by year to cover such demand;
4. The cost per horse-power at Fort William and Port Arthur on the above basis;
5. The revenue to be derived from the sale of power under the above conditions;
6. The deficits accumulated year to year by years during the period of deficits;
7. The anticipated profits available to wipe out said deficits during later years;
8. Under the above conditions the deficits and profits to be anticipated from continued flat rate during the entire period at \$15.00, \$17.50 and \$20.00 per horse-power at Fort William and Port Arthur.

The Commission will be greatly obliged if you may be able to let me have this information at your earliest convenience.

Yours very truly,

(Signed) WALTER J. FRANCIS.

Mr. Gaby duly acknowledged the receipt of the communication, and on August 15th, 1922, he made a reply of which the next succeeding eight pages are the substance.

ENGINEERING ECONOMICS—NIPIGON SYSTEM.

WALTER J. FRANCIS.

The information embraced in the eight sheets attached hereto is contained in a letter addressed by Mr. F. A. Gaby, Chief Engineer, Hydro-Electric Power Commission of Ontario, to Mr. Walter J. Francis under date of August 15th, 1922, in reply to his request under date of July 20th, on behalf of the Hydro-Electric Inquiry Commission.

Mr. Gaby's letter and its accompanying memoranda being in the original form only, and the statement in duplicate only, and the Secretary of the Hydro-Electric Inquiry Commission having expressed a desire to have a copy of the information for each member of the Commission, the information has been re-tabulated into its present form in which it is hoped it may be found convenient.

A transcription of Mr. Gaby's letter, together with one of the copies of his original statement, is enclosed herewith for the files of the Commission.

It is thought that the eight tables of statements on pages 34 to 37 are self-explanatory, after the basis on which they have been made up is understood.

The column headed "Year" in each case denotes the years in order from 1922 to 1935.

The column headed "Load" denotes the estimated amount of electrical energy in nominal horse-power, year by year. Mr. Gaby states that it is estimated the plant will have an installed capacity of approximately 75,000 horse-power, with yearly load factors varying from 65% to 70%, taking into consideration the character of the loads obtaining and estimated upon. Table 2 on page 34 is a transcription of the table of loads as billed to the Municipality of Port Arthur since November, 1921, and to the Nipigon Fibre and Pulp Company, all as given by Mr. Gaby.

Mr. Gaby concludes his memorandum on estimated loads, by saying: "You will note from above that we have not taken into consideration additional loads that may come from industries that are not already established in these districts and application has already been made for the amounts that are considered in these estimates." The memorandum forms the basis for the remarks in table 1 of the statement regarding loads.

The column headed "Capital Investment," table 3, gives the investment as estimated by Mr. Gaby under three headings—Transmission Lines, Generating Stations and Sub-Stations. He states that for 1924 the transmission lines are to be extended from the present temporary station to the permanent inter-city station, and that the capital cost therefor is included in the estimates.

The column headed "Operating and Fixed Charges," table 4, is copied directly as given by Mr. Gaby. In regard to it he says: "The estimates for the first two years of 1922 and 1923 are based on the actual operating costs of to-day. 1924 is estimated under the changed conditions of increased capital and increased equipment of transmission lines, generating and transformer stations. Operation is increased approximately \$22,750.00 due to the operation of the inter-city station (\$9,000.00) and increased patrol of transmission lines, as well as increased operation at the generating stations. Maintenance is increased from \$13,000.00 to \$24,500.00, and water rentals from \$12,500.00 to \$18,750.00.

"In 1925 there is an increase in operating expense of \$6,250.00 on account of water rentals; \$6,500.00 increased maintenance and \$1,500.00 on operating account, including administration.

"The increase in succeeding years is due largely to the increased capital and increased maintenance charges and water rentals."

Table 5 gives the estimated financial statement on the basis of the Hydro-Electric Power Commission's rates, which vary from \$25.00 to \$15.00 per year for inter-city power, and remain constant at \$18.00 per year for power for the Nipigon Fibre and Pulp Company. Mr. Gaby uses the expression "beginning at \$25.00 in 1922, and reducing to actual cost in 1928 of approximately \$16.00, maintaining the \$18.00 rate to the Nipigon Fibre and Pulp Company."

Table 6, table 7 and table 8 show estimated financial statements at a rate of \$15.00, \$17.50 and \$20.00 per horse-power per annum, respectively.

Mr. Gaby states that "The interest has been based on 5% as stated, sinking fund on 1% basis, and contingencies on 25c. per horse-power; depreciation charge on a sinking fund basis is based upon the life of the equipment and material included in the installation."

WALTER J. FRANCIS,
Consulting Engineer.

Toronto, August 15th, 1922.

ECONOMICS—NIPIGON SYSTEM.

ESTIMATED LOADS.

TABLE 1.

YEAR	LOAD H.P.	REMARKS
1922.....	12,000.....	Actual conditions as per statement given on table 2 hereof.
1923.....	25,000.....	Includes additional 10,000 H.P. for the Nipigon Fibre and Pulp Co.
1924.....	30,000.....	Includes additional power taken by the Kaministiquia Pulp and Paper Co., and Provincial Paper Co., in Port Arthur, and general increment in Municipal load.
1925.....	40,000.....	Includes additional load of Fort William Pulp and Paper Co.
1926.....	50,000.....	Includes additional 10,000 H.P. for pulp and paper, and Municipal loads.
1927.....	60,000.....	Includes additional 10,000 H.P. for increment in loads and adding Municipal load of Fort William.
1928.....	65,000.....	Includes general increment.
1929.....	70,000.....	Includes general increment.
1930.....	70,000.....	
1931.....	70,000.....	
1932.....	70,000.....	
1933.....	70,000.....	
1934.....	70,000.....	
1935.....	70,000.....	

ECONOMICS—NIPIGON SYSTEM.

LOADS AT PORT ARTHUR, NOVEMBER, 1921, TO JULY, 1922.

TABLE 2.

MONTH	YEAR	LOAD
November.....	1921.....	8,259.48 horse-power.
December.....	1921.....	8,083.00 horse-power.
January.....	1922.....	7,989.30 horse-power.
February.....	1922.....	7,962.40 horse-power.
March.....	1922.....	7,701.00 horse-power.
April.....	1922.....	7,711.89 horse-power.
May.....	1922.....	9,534.90 horse-power.
June.....	1922.....	9,569.00 horse-power.
July.....	1922.....	9,551.00 horse-power.
Average.....		8,484.66 horse-power.

The foregoing table gives the loads which have been billed to date.

New elevator and additional demand on account of the fall movement of grain will bring the average for the year to approximately 9,000 horse-power.

The Nipigon Fibre and Pulp Co. has been billed for 3,067 horse-power throughout the year.

ECONOMICS—NIPIGON SYSTEM.

ESTIMATED CAPITAL INVESTMENT

TABLE 3.

Year	Transmission Lines	Generating Station	Sub- Station	Total
	\$	\$	\$	\$
1922.....				6,522,000.00
1923.....				6,522,000.00
1924.....	1,770,000.00	6,880,000.00	500,000.00	9,150,000.00
	(2 circuits, wood and steel)	(3 units)	(4-8000 KVA)	
1925.....	1,808,000.00	7,550,000.00	698,000.00	10,056,000.00
	(City line added)	(4 units)	(7-8000 KVA)	
1926.....	1,968,000.00	9,040,000.00	710,000.00	11,718,000.00
	(Extra loop)	(5 units)	(7-8000 KVA)	
1927.....	2,204,000.00	9,766,000.00	900,000.00	12,870,000.00
	(3 circuits)	(6 units)	(10-8000 KVA)	
1928.....	2,204,000.00	9,766,000.00	900,000.00	12,870,000.00
1929.....	2,334,000.00	9,766,000.00	900,000.00	13,000,000.00
	(Extra city line)			
1930.....	2,334,000.00	9,766,000.00	900,000.00	13,000,000.00
1931.....				
1932.....				
1933.....				
1934.....				
1935.....				

ECONOMICS—NIPIGON SYSTEM

ESTIMATED OPERATING AND FIXED CHARGES

TABLE 4.

Year	Operation, Maintenance, Administration and Water	Interest, Sinking Fund, Contingencies and Depreciation	Total
	\$	\$	\$
1922.....	73,000.00	374,933.68	447,933.68
		(No Sinking Fund)	
1923.....	79,500.00	378,183.70	457,683.70
		(No Sinking Fund)	
1924.....	120,980.00	550,570.00	671,550.00
		(No Sinking Fund)	
1925.....	135,300.00	612,840.00	748,140.00
		(No Sinking Fund)	
1926.....	151,000.00	778,640.00	929,640.00
		(Sinking Fund Begins)	
1927.....	161,900.00	858,570.00	1,020,470.00
1928.....	161,900.00	858,570.00	1,020,470.00
1929.....	174,650.00	899,500.00	1,074,150.00
1930.....	174,650.00	908,560.00	1,083,210.00
1931.....			1,099,830.00
1932.....			1,111,350.00
1933.....			1,111,350.00
1934.....			1,112,650.00
1935.....			1,112,650.00

Note—Estimates for 1922 and 1923 are based on actual operating costs of today.

ECONOMICS—NIPIGON SYSTEM.

ESTIMATED FINANCIAL STATEMENT, H.E.P.C. BASIS.

TABLE 5.

Year	Load	Inter City Rate	Nipigon Fibre Rate	Estimated Revenue	Estimated Deficit	Estimated Surplus	Accumulated Deficit
	H.P.	\$	\$	\$	\$	\$	\$
1922 ..	12,000 ..	25 ..	18	279,000.00	168,933.68	nil	.....
1923 ...	25,000 ..	20 ..	18	480,000.00	nil	22,316.30	153,948.25
1924 ...	30,000 ..	20 ..	18	580,000.00	91,550.00	nil	253,195.66
1925 ...	40,000 ..	20 ..	18	780,000.00	nil	31,860.00	232,402.44
1926 ...	50,000 ..	20	18	980,000.00	nil	50,360.00	191,144.56
1927 ...	60,000 ..	20 ..	18	1,180,000.00	nil	159,530.00	33,195.29
1928 ...	65,000 ..	16	18	1,060,750.00	nil	39,530.00	nil
1929 ...	70,000 ..	15 ..	18	1,080,000.00	nil	5,850.00	nil
1930 ...	70,000 ..	15 ..	18	1,080,000.00	3,210.00	nil	nil
1931 ...	70,000 ..	15	18	1,080,000.00	.....	.....	.....
1932 ...	70,000 ..	15 ..	18	1,080,000.00	.....	.....	.....
1933 ...	70,000 ..	15 ..	18	1,080,000.00	.....	.....	.....
1934 ...	70,000 ..	15 ..	18	1,080,000.00	.....	.....	.....
1935 ...	70,000 ..	15 ..	18	1,080,000.00	.....	.....	.....

Note—Interest is compounded at 5% per annum.

ECONOMICS—NIPIGON SYSTEM.

ESTIMATED FINANCIAL STATEMENT, \$15 PER H.P. PER ANNUM.

TABLE 6.

Year	Load	Rate	Estimated Revenue	Estimated Deficit	Estimated Surplus	Accumulated Deficit
	H.P.	\$	\$	\$	\$	\$
1922	12,000	15	180,000.00	267,933.68	nil	267,933.68
1923	25,000	15	375,000.00	82,683.70	nil	364,014.06
1924	30,000	15	450,000.00	221,550.00	nil	603,764.76
1925	40,000	15	600,000.00	148,140.00	nil	782,093.00
1926	50,000	15	750,000.00	179,640.00	nil	1,000,759.76
1927	60,000	15	900,000.00	120,470.00	nil	1,171,267.75
1928	65,000	15	975,000.00	45,470.00	nil	1,275,301.14
1929	70,000	15	1,050,000.00	24,150.00	nil	1,363,216.20
1930	70,000	15	1,050,000.00	33,210.00	nil	1,464,587.01
1931	70,000	15	1,050,000.00	49,830.00	nil	1,587,646.36
1932	70,000	15	1,050,000.00	61,350.00	nil	1,728,378.68
1933	70,000	15	1,050,000.00	61,350.00	nil	1,876,147.61
1934	70,000	15	1,050,000.00	62,650.00	nil	2,032,604.99
1935	70,000	15	1,050,000.00	62,650.00	nil	2,196,885.24

Note—Interest is compounded at 5% per annum.
No surplus is possible at \$15 per H.P. per annum.

ECONOMICS—NIPIGON SYSTEM.

ESTIMATED FINANCIAL STATEMENT, \$17.50 PER H.P. PER ANNUM. TABLE 7.

Year	Load	Rate	Estimated Revenue	Estimated Deficit	Estimated Surplus	Accumulated Deficit
	H.P.	\$	\$	\$	\$	\$
1922.....	12,000....	17.50....	210,000.00....	237,933.68....	nil	237,933.68
1923.....	25,000....	17.50....	437,500.00....	20,183.70....	nil	270,014.16
1924.....	30,000....	17.50....	525,000.00....	146,550.00....	nil	430,064.76
1925.....	40,000....	17.50....	700,000.00....	48,140.00....	nil	499,707.99
1926.....	50,000....	17.50....	875,000.00....	54,640.00....	nil	579,333.38
1927.....	60,000....	17.50....	1,050,000.00....	nil	29,530.00....	577,293.54
1928.....	65,000....	17.50....	1,137,500.00....	nil	117,030.00....	483,276.71
1929.....	70,000....	17.50....	1,225,000.00....	nil	150,850.00....	349,048.24
1930.....	70,000....	17.50....	1,225,000.00....	nil	141,790.00....	217,621.15
1931.....	70,000....	17.50....	1,225,000.00....	nil	125,170.00....	92,451.15
1932.....	70,000....	17.50....	1,225,000.00....	nil	113,650.00....	nil
1933.....	70,000.....			Approximately.		
1934.....	70,000.....			\$16.00 flat rate.		
1935.....	70,000.....			To all customers.		

ECONOMICS—NIPIGON SYSTEM.

ESTIMATED FINANCIAL STATEMENT, \$20 PER H.P. PER ANNUM. TABLE 8.

Year	Load	Rate	Estimated Revenue	Estimated Deficit	Estimated Surplus	Accumulated Deficit
	H.P.	\$	\$	\$	\$	\$
1922.....	12,000....	20	240,000.00....	207,933.68....	nil	207,933.68
1923.....	25,000....	20	500,000.00....	nil	42,316.30....	173,898.24
1924.....	30,000....	20	600,000.00....	71,550.00....	nil	254,143.15
1925.....	40,000....	20	800,000.00....	nil	51,860.00....	212,397.30
1926.....	50,000....	20	1,000,000.00....	nil	70,360.00....	149,139.16
1927.....	60,000....	20	1,200,000.00....	nil	179,350.00....	nil
1928.....	65,000....	16	1,040,000.00....	nil	19,530.00....	nil
1929.....	70,000					
1930.....	70,000					
1931.....	70,000					
1932.....	70,000					
1933.....	70,000					
1934.....	70,000					
1935.....	70,000					

Note—Interest is compounded at 5% per annum.

Mr. Gaby's reply dated August 15th, 1922, as transcribed, was transmitted to the Commission by Mr. Francis on August 16th, 1922, and after discussion it was decided that Mr. Commissioner R. A. Ross, Mr. Commissioner Haney, Mr. Bower, Mr. Wegenast and Mr. Francis should make a further study of the matter and prepare a formal communication to Mr. Gaby regarding additional information and an amplification of his former reply.

The letter decided upon and duly sent to Mr. Gaby is as follows:

(Letterhead—Hydro-Electric Inquiry Commission)

ROOM 411, 110 ELM ST.,
TORONTO, ONTARIO.

August 16th, 1922.

F. A. GABY, ESQ.,

CHIEF ENGINEER, HYDRO-ELECTRIC POWER COMMISSION,
190 UNIVERSITY AVENUE, TORONTO, ONTARIO.

Re Economics—Nipigon System.

DEAR SIR:

As stated in my letter of yesterday, I transmitted your information on the economics of the Nipigon System to the Hydro-Electric Inquiry Commission, and the document was carefully read and fully discussed.

As a result of the discussion, I am now directed to ask if you will be so kind as to amplify some of the statements, and also to let the Commission have your views on others. In setting forth the questions, the references are to the information in the bound form, a copy of which I forwarded to you to-day enclosed with yesterday's letter.

Table 1.

- (A) Should not the column headed "Load" be designated "Power Sales" or some such title? The Commission feels that as these figures have been used in the estimated returns, they are really sales quantities. They think that it might be preferable to make the column headed "Load" refer to the load generated rather than to the load sold, especially as the ultimate idea is to get the value of the power generated.
- (B) The Commission would like to have a detailed list of the written applications that have been made for power.
- (C) The Commission also desires to have a list of existing contracts with private companies, together with the general conditions, prices, and so forth, applying thereto.

Table 2.

- (D) The Commission desires to know what security the Hydro-Electric Power Commission of Ontario has from the Nipigon Fibre & Pulp Company. Understanding that the indebtedness of the Nipigon Fibre & Pulp Company, up to October 31st, 1921, amounted to \$42,037.57, and that the security bond therefor was \$40,000.00, it would appear that the company owed the balance of \$2,037.57 on October 31st, 1921. In addition, there is also the indebtedness for the power billed since October 31st, 1921. Have the successors of the Nipigon Fibre & Pulp Company obligated themselves to the Hydro-Electric Power Commission for the full amount and if so, in what way?

Table 3.

- (E) The Commission would like to have the blank spaces for 1922 and 1923 in the table filled out in the same manner as has been done for the years 1924 to 1930.
- (F) Mr. Clarkson's statement of the capital cost of the Nipigon System to October 31st, 1921, appears to be \$6,463,158.12, made up as follows:

Amount charged to Nipigon System up to October 31st, 1921....	\$6,347,705.45
Add amount of investment in original system.....	115,452.67
Capital investment of Nipigon System up to October 31st, 1921	\$6,463,158.12

 in which the interest is calculated at the rate of 5% per annum.

From this it would appear that the total capital investment for 1922 should be more than \$6,522,000.00, and that for 1923 should be still greater than for 1922, apart altogether from the question of whether the rate of interest is 6.2% or 5%.

- (G) Does the expression "Generating Station" include all the equipment necessary to put the high voltage current on the transmission lines?
- (H) The Commission would like to have general details of the items of capital estimates.
- (I) Please state briefly what is meant by "City Line," "Extra Loop" and "Extra City Line."

Table 4.

- (J) The Commission would like to have the items in columns 2 and 3 separated into their component parts.
- (K) Please state the actual operating costs since the plant began operating.
- (L) Understanding that the water rentals were placed at \$1.00 per horse-power per annum, please state how a lower rate is now arrived at, and give a copy of the documents relating thereto.
- (M) How are the totals arrived at for the years 1931 to 1935?
- (N) In computing the interest, in the event of the Government holding to the rate of 6.2%, how long could it be applied, or, in other words, what is the maturity date of the bonds to which the 6.2% rate applies?
In this connection, what rate is the Government now getting?
What is the basis for your view that the rate of interest will decline materially?

Table 5.

- (O) No "accumulated deficit" is given for the year 1922. Was there not a deficit as at October 31st, 1921?
- (P) What were the actual deficit figures for the year 1921, and for the succeeding months of 1922?
- (Q) In a general way, what is the diversity factor as between the Hydro-Electric Power Commission and the Municipalities, and what are the principal diversity factors in the various plants at Niagara?
- (R) Is the Commission to assume that the deficit of \$3,210.00 for the year 1930 is only a mathematical figure, and that the adjustment from time to time would make an exact balance?

If I may not have made myself clear in the above questions, I shall be very glad indeed to discuss them with you at your convenience."

Yours very truly,

(Signed) WALTER J. FRANCIS,
Consulting Engineer.

Mr. Francis received the following reply from Mr. Gaby on September 1st, 1922:

(Letterhead—Hydro-Electric Power Commission)

TORONTO, ONT.,
28th August, 1922.
T.C.J.

MR. WALTER J. FRANCIS,
CONSULTING ENGINEER, HYDRO-ELECTRIC INQUIRY COMMISSION,
ROOM 411, 110 ELM ST.,
TORONTO.

DEAR SIR:

Replying to your communication of the 16th instant, with reference to report on Economics of the Nipigon System, the Commission begs to submit herewith the additional information which you have requested.

Table 1.

- (A) You are correct in your assumption that the figures submitted in our report under the heading of "Load" may also be designated as "Power Sold." If would be incorrect to base any calculations of the kind which you have requested on "Generated Load," as the value of such generated load is determined entirely by the energy sold, and for the purpose of a report such as you have requested, generated load would be of no value whatever, and as you state that the ultimate idea is to obtain the value of power generated, there is only one means by which this can be accomplished, viz.: the revenue obtained from power sold; consequently, all the Commission's computations in connection with estimates to municipalities are always based on the total load sold.

Table 1.

- (B) Attached hereto the Commission begs to submit details concerning applications for power.

Up to the time prior to the delivery of power from the Nipigon Development, all matters pertaining to the sale of power and applications in connection therewith, were handled directly by the Public Utilities Commission of Port Arthur, and since that time, as practically all the power is still being used by the Municipality of Port Arthur, a great many of these written applications have been directly with the municipality; requests for certain large loads, however, have been received at various times by the Commission and are listed herewith, together with copies of correspondence attached:

Great Lakes Pulp & Paper Company.

(Successors to J. J. Carrick).

Extract from letter of Mayor of Port Arthur, dated January 9, 1917;

Letter from Frank H. Keefer, Solicitor for J. J. Carrick, dated March 26th, 1917, stating that requirements amounted to 20,000 H.P., and requesting prices on various amounts up to 60,000 H.P.;

A joint resolution of the Public Utilities Commission and the City Council of the City of Port Arthur, dated October 27th, 1917;

Letter, A. J. McKay, Solicitor for Great Lakes Pulp & Paper Co., dated November 21, 1919, stating that first unit would require 12,000 H.P.;

Extract from a communication from Sir Wm. Hearst, dated June 4, 1918;

Correspondence with L. L. Horton, President of the Nyando Pulp & Paper Corporation of Rochester, New York, which controlled large limits west of Fort William and we understand disposed of same to the present Fort William Pulp & Paper Company;

Communication from Mr. L. L. Horton, dated April 4th, 1918;

Extract from report of Mr. F. F. Espenschied, dated April 30, 1918, stating that Mr. Horton required from 8,000 to 10,000 H.P.;

Communication from Mr. L. L. Horton, dated December 27th, 1918;

Communication from Nipigon Fibre & Paper Mills, Limited;

Communication from Messrs. Russell & Little, dated April 23, 1920, stating that the Company's requirements by December 1, 1921, would be in the neighborhood of 7,000 H.P.;

Communication from Mr. W. H. Russell, dated March 13, 1920, saying that requirements would be from 6,000 to 10,000 H.P.;

Communication from Mr. J. H. Black, dated January 25, 1922, stating that the new company requires in the neighborhood of 8,000 to 10,000 H.P.;

Kaministiquia Pulp & Paper Company;

Communication from Mr. C. D. Howe, dated May 21, 1920.

A verbal request was also made by the Mayor of Port Arthur and the present Manager of the Kaministiquia Pulp & Paper Company when they were in Toronto between July 28th and August 12th, for 10,000 H.P., stating that the company was prepared to use this amount of power soon as the Timber Limits could be secured from the Government.

A verbal request was made to the Commission by representatives of the Spanish River Pulp & Paper Co., on behalf of the Fort William Pulp & Paper Co., by personal interviews held in this office, July 14th, 15th and 17th, when it was stated that the company required to obtain from the Commission anywhere from 11,000 to 19,000 H.P.

A verbal request was also made about a year ago for power by the Detroit Sulphide Co., by officials of the company and their Port Arthur representative at a personal interview held

in this office. This company operates considerable plant in the vicinity of Detroit and is now shipping a large amount of pulpwood from the Port Arthur-Fort William district obtained from settlers. This request has been followed up on several different occasions and the company proposes to install a mill as soon as the Timber Limits can be secured

Correspondence received from the Mayor and Public Utilities Commission of Port Arthur, bearing on this subject, under date of July 5, 1918, and February 13, 1918, is also attached hereto.

Table 1.

- (c) In the early part of 1922 an elevator company at Fort William, whose contract was expiring on April 30th, applied to the Commission for a supply of 500 H.P. at Fort William. Prices were submitted and the Commission and the proposed customer signed the contract. The Commission was about to erect the necessary poles and line to serve them when Fort William Council passed a resolution ordering the poles to be cut down if the Commission attempted to erect them. Telegrams were sent and these threats put into concrete shape.

Owing to the fact that power had to be there by May 1st, the Elevator Company could not take the chance of waiting for the discussion and legal status and cancelled their contract and renewed their contract with the Kaministiquia for a further term of five years; thus, owing to Fort William's action, deprived itself of 500 H.P. with every prospect of the Commission securing another elevator of nearly double the capacity, whose contract expired during the autumn.

Telegrams are here to show that Fort William claimed that they were not consulted. A day was fixed on which all parties were advised to attend here. Fort William refused to attend, but the elevator people did attend and owing to the shortness of time and the danger of delay they cancelled their contract and took power from the Kaministiquia people.

Minutes of the meeting of the Board during the latter part of March will show this.

The only existing contract which the Commission holds on file outside of the contract with the cities of Fort William and Port Arthur is that of the Nipigon Fibre & Paper Mills, Ltd., which is dated October 1st, 1920, covers a term of ten (10) years with the privilege of renewing for two five-year terms, and covers various amounts of power from 3,000 to 8,000 K.W., with rates ranging from \$24.00 per H.P. per annum, up to 4,000 H.P. to \$18.50 per H.P. per annum, when 10,000 H.P. is taken.

The contract between the Port Arthur Pulp & Paper Company now controlled by the Provincial Paper Mills, Limited, is between the Company and the Public Utilities Commission, as is also the agreement with the Kaministiquia Pulp & Paper Company.

Table 2.

- (d) The security held by the Commission from the Nipigon Fibre & Paper Mills, Ltd., consists of a \$40,000.00 bond; a writ has been issued against the bond company for the amount of the bond, and against the Nipigon Fibre & Paper Mills, Ltd., for the full amount of their indebtedness to the Commission. As we understand that you already have a copy of the agreement to be executed with the successors to this company, you will ascertain by referring thereto, information which you have requested, and you will also find that the new company was required to give a bond similar to their predecessors and at the same time agree to settle all indebtedness of their predecessors carried on our books on account of power sold.

Table 3.

- (E) The information in the blank spaces under the years 1922 and 1923 is as follows:

ESTIMATED CAPITAL INVESTMENT.

Year	Transmission Lines	Generating Station	Sub- Station	Total
1922	\$596,645.00	\$5,775,693.00	\$149,662.00	\$6,522,000.00
1923	596,645.00	5,775,693.00	149,662.00	6,522,000.00

Table 3.

- (F) With reference to the total capital estimated on for the years 1922 and 1923, the Commission begs to advise that the actual capital on the Commission's books to August 24, 1922, for the generating station, less the value of material returned to Stores, was.....\$ 5,745,099.06

The capital in connection with transmission lines in the Commission's books up to the same date, less the cost of the original lines between the old Port Arthur sub-station and the Fort William boundary was..	596,645.65
The total capital on the Commission's books up to the same date, less the cost of the sub-station used in connection with distributing power received from the Kaministiquia Power Company was.....	149,662.76
Total.....	\$ 6,491,407.47

The difference between this amount and the \$6,522,000.00 shown in the last column of page for the years 1922 and 1923 is considered to be the cost of Operators' Cottages, and other improvements at the plant.

The capital covered by the lines and station originally used to receive and distribute power purchased from the Kaministiquia Power Company have not been considered in the capital shown in the report, as negotiations have been going on for some time between the Public Utilities Commission of Port Arthur and the Hydro Commission covering the sale of these properties, and this report deals entirely with "Nipigon Development Capital."

Table 3.

- (F) There is no reason whatever why the 1923 capital should be any greater than 1922, as for the purposes of this report we have not considered any additional capital expenditure in generating station, transmission lines or sub-station equipment until the installation of the third unit, which is covered by additional capital in the report under the year 1924.
- (G) The capital shown under generating station includes all generating and step-up equipment up to the outgoing bracket on the generating station of the 110,000 V. transmission line.

Table 3.

- (H) The general details of the items of capital estimates are as follows:
The capital given under transmission lines includes the value of all equipment used in connection with the said transmission lines from the outgoing bracket on the generating station to the incoming bracket on the sub-station.

The amount of capital covered by the generating station includes the cost of all equipment involved in generating and transforming electrical energy and covers hydraulic and electrical generating equipment and all expenditures up to the outgoing bracket of the 110,000 V. lines on the generating station. The capital investment in sub-stations is covered by the present temporary sub-station at Bear Point and includes transmission, protective and switching equipment therein, plus new proposed inter-city sub-station with similar equipment at a point central to both municipalities and located approximately on the boundary between same.

Table 3.

- (I) Attached hereto you will find six diagrams showing the arrangement of the transmission lines at present, and proposed, under the headings of:

12,000 H.P. and 25,000 H.P.
30,000 "
40,000 "
50,000 "
60,000 "
70,000 "

At the present time the transmission line leaves the generating station and runs in a south-westerly direction to Sprucewood at which point the line branches to Nipigon for the Nipigon Fibre & Paper Mills and also continues westward to Port Arthur.

When the third unit has been installed, it is proposed to construct the transmission line from the generating station as far as Nipigon Village over a different route running almost directly south from the plant on the east side of the Nipigon River and from Nipigon Village westward over the same right-of-way as the existing lines.

You will note that from the generating station via Sprucewood and Nipigon Village a loop circuit is formed so that with the double circuit lines one circuit goes via the old route, and one via the new, joining at Sprucewood.

When 40,000 H.P. is sold the estimates cover an additional line from Bear Point to the Inter-city Station, thus the expression "City Line Added."

When 50,000 H.P. is sold it is proposed to construct a double circuit on the east side of the loop around Nipigon Village to Sprucewood, that is, on the steel tower line, thus the expression "Extra Loop." When 60,000 H.P. is sold, it is proposed to construct three circuits as far as Bear Point, one being the original wood pole line and the other being two circuits on the steel towers only as far as Bear Point; from the latter location to the Inter-city Station it is only proposed to use two lines.

With 70,000 and 75,000 H.P. sold, it is proposed to add the additional third circuit from Bear Point to the Inter-city Station, hence the expression "Extra City Line."

Table 4.

- (j) The items under columns two and three have been separated into their component parts and are attached hereto (Administration includes Head Office Operating Staff).

Table 4.

- (k) The operating costs since the plant began operating are given in the following: Included in these figures are the total operating expenses for the year ending October 31, 1921, and for the nine months ending July 31, 1922.

	1921	9 mos. ending July 31, 1922	Total
Operation.....	\$ 32,610.28	\$ 29,983.50	\$ 62,593.78
Maintenance.....	1,617.54	3,367.30	4,984.84
Administration.....	11,192.50	10,588.14	21,780.64
Interest.....	177,999.88	247,585.66	425,585.54
Contingencies.....		2,250.00	2,250.00
Depreciation.....		34,125.48	34,125.48
	<u>\$223,420.20</u>	<u>\$327,900.08</u>	<u>\$551,320.28</u>

Table 4.

- (L) Up to the present time no agreement between the Commission and the Government in the nature of a Crown Lease has been completed and the matter is still being negotiated. Communications have been received from the Deputy Minister of Lands and Forests, desiring that the water rental be placed at \$1.00 per H.P. per annum, and the Commission has strongly objected to this figure on account of the fact that it will be competing with the Kaministiquia Power Company, which pays no rental. The Government has, we understand, made leases to other similar developments at a rental of fifty cents per H.P. per annum. The matter has been discussed at Board meetings on various occasions and has been left in the hands of Colonel Carmichael to further negotiate. The Commission takes the stand that the water rental should not be in excess of fifty cents per H.P. per annum and have used this figure in making up estimates in connection with the report which we have submitted to you. Such being the case, it is impossible to submit to you copy of any Lease or Agreement with the Government as none such exists at the time.

Table 4.

- (M) The totals from 1931 to 1935 are arrived at on account of deferred sinking fund. You will note that we have not considered sinking fund payments as becoming effective until the year 1926, therefore, it has been necessary to carry the operating expenses and the revenue figures five years beyond 1930 in order to arrive at the point where the sinking fund would be the same each year, considering that no new capital is added after the plant has been completed in the year 1929 when generating station, transmission lines and sub-stations have been completed for the entire plant output.

Table 4.

- (N) The Commission is unable to give you information in connection with the maturity bonds as such matters are handled by the Government, and funds furnished the Commission are obtained from the consolidated fund. The Commission is basing its interest charges on 5% in all of its estimates on account of promises made by members of the Cabinet to the Chairman and other officers of the Commission at a Conference held in the Premier's Office. This matter has further been dealt with by Auditor Clarkson.

Table 5.

- (O AND P) 1921 was not taken into consideration in this report as it was assumed that the information desired was expected results from several years' full and complete opera-

tion of the plant, and as the plant was partly under construction in the year 1921, it was not considered equitable to take this year into consideration at all in submitting a report such as you have requested. The actual deficit on the Commission's books as at October 31, 1921, was \$18,708.83, which was fully covered by surplus in the Commission's hands.

We are unable to determine until the accounts are adjusted at the close of the present year (October 31, 1922) what our deficit will be for the current year.

Table 5.

- (Q) The plant has not yet been operating for a long enough period to give you any information in connection with diversity, as there has been only practically one customer and that is the City of Port Arthur. The Nipigon Fibre & Paper Mills' plant has not been in operation long enough to give any definite information as to this question. It should be borne in mind that it is quite possible that all of the power with the exception of the Nipigon Fibre & Paper Co.'s plant will be handled by either Port Arthur or Fort William, and, under such conditions, there would be three customers, The Nipigon Fibre & Paper Co., the City of Port Arthur and the City of Fort William, with a certain diversity between the three, depending upon the times during the day when the maximum peak of each would occur. As Port Arthur is the only customer using energy at the present time, it is impossible to determine what the diversity factor will actually be. Attached hereto, under separate statement, will be found information concerning diversity conditions on the Niagara System.

Table 5.

- (R) As far as the deficit of \$3,210.00 is concerned in 1930, it will be noted that there was a surplus of \$39,530 shown in 1928 and a further surplus of \$5,850 in 1929, so that if a deficit of \$3,210 occurred each year for several years, it would take approximately fifteen (15) years before the accrued deficits would balance the surplus; consequently, it was considered that this matter would adjust itself.

It should be borne in mind also that there is a large load in the City of Fort William now being served by the Kaministiquia Power Co., which is bound to be obtained by the Hydro Commission as soon as lines are constructed in the City of Fort William.

Had the City of Fort William adopted a different attitude in the past than it did, there is no doubt whatever but that a load of approximately 5,000 H.P. in the City of Fort William could have been obtained by the end of the current year in the nature of the Consolidated Elevator Co., the Mutual Elevator Co., and the Canadian Pacific Railway load.

As these contracts and several others will expire in about five (5) years' time, there is no doubt but that a large portion of the existing Fort William load will become connected to the Hydro System.

Yours truly,
(Signed) F. A. GABY,
Chief Engineer."

GREAT LAKES PULP & PAPER COMPANY.

Extract from Letter of the Mayor of Port Arthur, dated January 9th, 1917.

I think we are safe in assuming that the requirements of the City of Port Arthur within the next three years, considering only what industries are now in view, that this city will require somewhere between 10,000 and 14,000 H.P. In excess of the above requirements, we have been dealing with a news print mill who are apparently anxious to locate here adjacent to the pulp mill referred to above. Naturally we are anxious to obtain the location of this mill here as it means the employment of something like 1,200 men. I think we can arrange all the terms for the location of this mill, except the supply of power. This company wishes to be assured of a supply of 16,000 H.P.

(Copy)

March 26th, 1917

THE CHAIRMAN,
HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO,
TORONTO, ONT.

DEAR SIR ADAM:

I have been instructed by Mr. J. J. Carrick to apply to your Commission for the delivery of power to some industries that he intends to have located adjacent to Bear Point and the northerly limits of Port Arthur.

The following are the particulars:

1. *Quantity.* The amount of power required is 20,000—24 hour H.P. for use in the pulp and paper industry.
2. *Time.* It will be wanted about eighteen months from date.
3. *Temporary Power.* Prior to the delivery of the above quantity to the extent of about 2,000 to 3,000 H.P. will also be wanted.
4. *Situation.* The property will be situated in the Municipality of Shuniah, immediately adjoining the limits of Port Arthur.
5. *Price.* Being for the pulp and paper industry, the price is of course of considerable importance, and I would respectfully ask that you have your engineers furnish as soon as possible an estimated price on the above quantity of power, also as to when it can be delivered.

This application, together with the power requirements for the City of Port Arthur alone, will justify a development of at least 30,000 H.P. and from now on additional power will be steadily demanded at the head of the Lakes.

In the quotation it would be very obliging if the prices are quoted as either stepped down or high tension at the plant, which for the purpose of estimation, can be considered as the north-easterly boundary line of the City of Port Arthur. Also in quoting prices, please quote same as when 20,000 H.P. is consumed, also what when 30,000 H.P. is consumed by Mr. Carrick and the City of Port Arthur, and then what will be prices when consumption rises to 40,000, 50,000 and 60,000.

6. *Time to Contract.* In view of the investment being made, it is desirable to obtain as long a time contract as possible—say forty or fifty years—just as Port Arthur is asking.

I have represented to Mr. Carrick that the prices quoted by you will be reduced as the quantity of power used is increased and that the Hydro-Electric, not making any profit in the matter, will be delivering the power at cost, which cost will include a sinking fund, interest and maintenance.

Mr. Carrick would be greatly obliged if an early reply to this letter can be obtained as he wished to see his financial associates in the City of New York and lay same before them for immediate action.

Yours very truly,

(Signed) FRANK H. KEEFER

Copy of Resolution Passed at Joint Meeting of the Public Utilities Commission and the City Council of the City of Port Arthur, Ontario, held October 27th, 1917.

Whereas J. J. Carrick and his associates are considering the construction of works for the development of the pulp resources of this district.

And whereas it is of vital interest to the City of Port Arthur and vicinity that these works be constructed in or near to Port Arthur.

And whereas the development of electric power is a very important factor in connection with the said works, and also to the upbuilding of the City of Port Arthur and the development of such power would have the effect of bringing other manufacturers and power-using enterprises to this vicinity and be a great benefit to the whole community.

Therefore, be it resolved that this matter be placed before the Government of the Province of Ontario, and it be urged to develop or cause to be developed or otherwise acquired, such quantity of electric power as will be necessary to supply Mr. Carrick's proposed industry and other proposed industries which we have no doubt will follow if a supply of power is on hand. As time is a most important element the Government be urged to give this important matter its immediate attention, as delay is most likely to be fatal."

(Copy)

SCHEDULE,
PORT ARTHUR, ONT.,
Nov. 21st, 1919.

TO THE MAYOR AND COUNCIL OF THE CITY OF PORT ARTHUR,
PORT ARTHUR, ONT.

GENTLEMEN:

At a formal meeting held with the Council yesterday, I was requested to write a letter setting out what the Great Lakes Pulp & Paper Company, Limited, contemplates doing with regard to the erecting of paper mills in this district.

3 T.B.S.

The Company is considering the establishment of pulp and paper mills on, or in the vicinity of Mining Location 7-E, McGregor Township, about three miles from the north boundary of the City, and is in a position to promptly proceed with the work of clearing the site, getting material on the ground and commencing the construction of the buildings.

It is intended to erect a first unit of two paper-making machines making 33,000 tons of paper per annum, and in addition, to operate a sulphite mill and ground-wood mill. The investment in the first unit, consisting of paper, sulphite and ground-wood mills, will represent an outlay of approximately \$4,000,000. The erection of this first unit will be in excess of the requirements of the contract between the Ontario Government and the Company.

The Company will employ in the operation of this first unit at least 500 men, and in addition a large number of men will be employed in the woods.

The plans of the Company provide for the early addition of a second unit, that is two more paper-making machines, as soon as the first unit is in proper operation, and later on a third unit of two additional paper-making machines, making three units altogether, or a total of six paper-making machines. The number of employees will of course be proportionately increased as these units are added.

The Company proposes taking power from the Hydro-Electric Power Commission of Ontario, the amount required for the first unit, paper sulphite and ground-wood mills being 12,000 H.P.

At our conference yesterday, it was suggested that Port Arthur is desirous of securing the benefits which may accrue from the establishment of this industry. The practical working out of this idea will require the providing of lines of communication between the City and the site of the proposed mills, such as a highway and street railway and telephone lines.

Will you be good enough to advise me what proposals you are prepared to make to this end, so that I may be able to make an immediate decision as to our future plans.

Yours very truly,
(Signed) A. J. McKAY.

Extract from Letter of Sir William Hearst, dated June 4th, 1918.

I simply want to point out, at the earliest possible moment, that no power development at Nipigon could be considered that will not provide for the power requirements necessary for the development of the Nipigon pulp concessions.

(Copy)

Horton Interests—Nyando Pulp & Paper Company.

NYANDO PULP & PAPER CORPORATION

MANUFACTURERS OF LUMBER, PULP AND PAPER.
ROCHESTER, N.Y.,

April 4th, 1918.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO,
190 UNIVERSITY AVENUE,
TORONTO, ONT.

GENTLEMEN:

I am pleased to acknowledge receipt of your letter of April 1st, enclosing copy of agreement form E. 171220. I believe this form will be of material assistance to us in arriving at our requirements for electric energy at Fort William.

Will you kindly advise me if the transmission line is erected and maintained to our plant at Fort William, also at whose expense the transformer house is erected and equipped?

I notice in paragraph 2-J that the customer is to secure the right-of-way for poles, etc. Does this mean that we are to secure the right-of-way from Nipigon to Fort William, or just what does it mean?

I trust as per our conversation on Saturday last with Mr. Gaby that you will advise us by mail promptly or by telegram the approximate cost of this power to us at Fort William, per horse-power per 24-hour service per annum, based on a ten-minute load and a 90% power factor.

Will you also advise me if we may contract for a term of 50 years? As I understand it, as the entire consumption of the Nipigon power is taken up, the rates per horse-power per annum

are lower, that is to say, the initial rate may be a certain amount, but if the entire consumption of the development be used, our rate would be, in that case, much less per horse-power per annum.

We expect to have another meeting in about one week, at which all of these matters will be decided, and it is for that reason I should like to be fully posted as to rate, possible term of contract, date when we may receive service, and how much lower than the initial charge will take place as additional power is sold from the Nipigon Development by you.

Yours very truly,

(Signed) L. L. HORTON, *Pres.*

P. S.—Under contract how do you arrive at the H.P. used per month?

Extract from Report of Mr. Espenschied, dated April 30, 1918.

April 30th, 1918.

CHIEF ENGINEER,
FORT WILLIAM.

This morning Mr. L. LaVerne Horton, President of the Nyando Pulp & Paper Corporation, Rochester, N.Y., called at this office in company with a gentleman from Fort William. After conversing with you on the telephone on this matter, I had a talk with Mr. Horton on the question of a power supply in Fort William. He advised that he had practically completed arrangements for financing his proposed enterprises requiring from 8,000 to 10,000 H.P. in Fort William as soon as we could supply it and that he is extremely anxious to hear from the Commission on the question of price and quantity. I explained that the estimates were still incomplete and that they would have to be taken up with the Commission before they could be discussed with him. Mr. Horton expressed the hope that he could secure advice from us this week, but I advised that it did not seem possible with the amount of work now on hand. I told him that possibly early next week such information would be available, but that I could not promise him anything definite.

(Copy)

NYANDO PULP & PAPER CORPORATION.

ROCHESTER, U.S.A.,

Sept. 27th, 1918.

MR. F. A. GABY,
Chief Engineer, Hydro-Electric Commission of Ontario,
Toronto, Canada.

DEAR MR. GABY:

Since seeing you last week I have had a talk with my associates in New York, and have told them that you are anxious to know whether or not they are prepared to contract for power at the present time.

These gentlemen are still ready to go ahead with the proposition providing a low price for power can be obtained, subject of course, always, to interference with our plans due to conditions brought about by the war. They feel, however, that the price quoted by you, namely \$20.00 per H.P. year, is prohibitive and that they would not be warranted in making the large investment unless they can be assured of an adequate supply of cheap power.

In case you could see your way to quote us a low price we would be willing to use as much off-peak power as possible. This would have to be worked out, however, by engineers before the exact amount of off-peak power could be determined.

We are all greatly disappointed. We still hope that Sir Adam may be able to quote a figure low enough to warrant us in going ahead.

If the operation of the first unit shows satisfactory results, especially in connection with freight rates and labor conditions, I know that my associates are prepared to add additional units making the plant one of the largest in Canada or the United States."

Yours very truly,

NYANDO PULP & PAPER CORPORATION,
(Signed) L. L. HORTON, President.

(Copy)

NIPIGON FIBRE & PAPER MILLS, LTD.

PORT ARTHUR, ONT., April 23rd, 1920.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO,
190 University Avenue,
Toronto, Ontario.

DEAR SIRs:

Attention W. W. Pope, Secretary.

In accordance with conversations with your Chief Engineer, Mr. F. W. Gaby, on the 29th ultimo and 1st instant, we hereby make application for the supply to us of power at our proposed site for pulp mill development on the East Part of Lot Number Ten in the Second Concession of the Township of Nipigon as follows:

On January 1, 1921, or earlier, 3,500 H.P. with the privilege of increasing the above amount in units of 1,000 H.P. on thirty days' notice for each unit up to and including December 1, 1921, when we will require 6,500 to 7,000 H.P.

It is our understanding that the Commission would prefer to deliver us power at a tension of 2,200 volts so as to assist in the delivery of power to the Municipality by the Commission; and you will recall that the price as nearly as could be approximated when we saw you, was sixteen dollars and fifty cents (\$16.50) to seventeen dollars (\$17.00) per horse-power per year at the voltage stated.

We contemplate the ultimate erection, in addition to a mechanical pulp mill of one hundred tons daily capacity (24 hours), of a paper mill; and in the latter event, we estimate that our total requirements for power will be ten thousand (10,000) horse-power at, say, January 1, 1924, although in our present application, we do not contemplate a larger consumption than 6,500-7,000 H.P. as stated.

We also understand from our conversation with you that in the event of the total amount of power requested to be delivered for any given date not being entirely used, we are charged by the Commission with seventy-five per cent. (75%) of such total so requested or the actual amount of power when same is in excess of such percentage.

Will you kindly act as promptly as possible on our application and furnish us in due course with copies of proposed contracts covering same for our examination and approval.

Yours truly,

(Signed) W. H. RUSSELL,

J. A. LITTLE,

For Nipigon Fibre and Paper Mills, Limited.

(Copy)

RUSSELL TIMBER COMPANY, LIMITED.

PORT ARTHUR, ONT.,
March 13th, 1920.

MESSRS. HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO,
University Avenue,
Toronto, Ontario.

DEAR SIRs:

We have definitely decided on the construction of a Pulp and Paper Mill in the District of Thunder Bay and Province of Ontario and have been looking over all the available sites for same in both Fort William and Port Arthur, as well as elsewhere in the District.

We are inclined to believe, that the proper place for us to locate is on certain land which we own at Nipigon, but in order for us to form an intelligent decision it is necessary for us to know how soon you could supply us power at this point and also what the price would be at high tension voltage there. We assume that there will be considerable deferential, as to price in favor of Nipigon over the head of the Lakes on account of the shorter transmission.

We will require, as soon as you can deliver, at least 4,000 H.P., which would be increased within twelve months to 6,000 and within three years to from 9,000 to 10,000.

'If you think it advisable, the writer could come to Toronto at your convenience to discuss this matter with you.

Thanking you in anticipation of an early reply, we are,

Yours truly,

RUSSELL TIMBER COMPANY, LIMITED,

(Signed) W. H. RUSSELL,
President.

(Copy)

TORONTO, ONTARIO,
January 25th, 1922.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO,
Toronto,
Ontario.

DEAR SIRs:

Re Nipigon Fibre Co.

Referring to my interview with your Mr. Gaby and Mr. Jeffery beg to say the above Company as you are aware has been idle for months and from appearances is in rather desperate shape financially. I have interested some capital in this proposition and desire to reconstruct the whole proposition on good sound business lines, increasing the capacity to a proper economical point from the standpoint of efficient operating, namely 100 tons of ground wood pulp for newspaper use per day using upwards of 8,000 H.P., with sufficient working capital and wood supply. The present capacity is around 30 to 40 tons daily.

Among the mass of accumulated bills for payment and other documents found is the contract with your Commission for power, and my financial group asked me to discuss with you the possibility of reduction in rates. My people feel the rate should be \$17.00 per H.P. year measured on low tension side instead of the sliding scale now in contract ranging from \$24.00 per H.P. to \$18.50 for a block of 10,000 H.P. or over.

I have been advised the general principle surrounding your operation, namely power at cost, which would not operate to our benefit on such a contract as now exists with present Company, and feeling you are desirous of creating a load for your generating station, which I am informed has a large surplus of unsold power, believe you will give same your usual careful consideration, doing the very best possible for us. May I add I would not like anything to interfere with my closing with the capital interested now. You can appreciate now is the time capital needs encouragement.

Beg to say further, that the writer has not at any time been connected in any way with the Nipigon Fibre Co.

It will be necessary to get speedy reply; as stated before, have this capital interested now, but may not be able to have them continue.

Yours respectfully,

(Signed) J. H. BLACK,
36 Toronto Street.

KAMINISTIGUIA PULP & PAPER COMPANY.

(Copy)

C. D. HOWE & COMPANY

PORT ARTHUR, ONT.,
May 31st, 1920.

THE ONTARIO HYDRO-ELECTRIC POWER COMMISSION,
University Avenue,
Toronto, Ontario.

DEAR SIRs:

Confirming conversation between the writer and your Mr. Gaby of May 28th, our Clients, the Kaministiquia Pulp & Paper Company, desire to enter into a contract with your permission to obtain about 2,000 H.P. of power at 22,000 volts delivered to their substation on their site at Fort William.

The Company have at present two sites under consideration, one site being located on the property of the Canadian Government Railways at the Mission, Fort William, adjacent to the Grand Trunk Pacific Elevator, and a second site located on the Mission side of the Kam River at the turning basin, above the Grand Trunk bridge. It seems probable that the first-mentioned site will be chosen.

We anticipate that delivery of power will be required about October 15th.

We would ask that you submit to us a contract made out in the name of our Clients, and based on location of the mill on the property at the Mission alongside the Grand Trunk Pacific Elevator. We would also ask that you advise us the price for power delivered to the last-mentioned site at the turning basin.

We desire to close this contract within the next two weeks as all financial arrangements for this undertaking are complete, and building will start at once.

In case you wish to investigate the financial responsibility of our Clients, we would refer you to A. E. Osler and Company of Toronto, who are financially interested in this project.

Yours truly,

(Signed) C. D. HOWE.

MISCELLANEOUS—PORT ARTHUR—FORT WILLIAM.

(Copy)

MAYOR'S OFFICE.

PORT ARTHUR, CANADA,

July 5th, 1918.

W. W. POPE, ESQUIRE,

Secretary, Hydro-Electric Commission,
Toronto, Ontario.

DEAR SIR:

Yours of the 2nd instant received. I am enclosing a letter sent to me by The Public Utilities Commission, which explains the sentiment of both Cities, who are, I regret to say, forming the impression that the Provincial Government has not the interest of the North-Western portion of the Province fully at heart.

What Port Arthur and Fort William are anxious to know now is what is holding up the construction and at what date you have decided to start operations. As the matter now stands, we are right up against it, and our industrial development is blocked for want of power policy. Mayor Murphy informs me that he has a customer now for 7,000 horse-power, but can get nothing definite from you.

A concrete proposition at an early date, will be appreciated by the residents at the head of the Lakes. If it will be of any assistance to you, we can send a joint delegation down to press matters.

Awaiting your reply, I am,

Respectfully yours,

(Signed) EDWARD BLOQUIER,

Mayor

(Copy)

THE PUBLIC UTILITIES COMMISSION OF THE CITY OF PORT ARTHUR.

PORT ARTHUR, ONT.,

February 13, 1918.

THE HYDRO-ELECTRIC POWER COMMISSION,
190 University Avenue,
Toronto, Ontario.

Attention of Sir Adam Beck.

DEAR SIRS:

At a meeting of the Public Utilities Commission of the City of Port Arthur, the under-noted resolution was unanimously adopted. The contents of the said resolution we trust you will give your very earnest attention and that the agreement duly signed and forwarded by us to your good selves in April of last year be executed by your Commission and the copy returned to

us in order that we can feel assured that every effort is being made to satisfy the demands for energy when our existing contract expires in April, 1920.

"Whereas, former written application was made jointly by this Commission and the City Council of Port Arthur, dated the 11th of November, 1916, to the Hydro-Electric Power Commission of Ontario, for the development of Dog Lake or Silver Falls in order that the necessary electrical energy be available to supply the ever increasing demand in the District of Thunder Bay and the City of Port Arthur in particular for industrial purposes.

"AND WHEREAS, the action of this Commission and the City Council with respect to future power requirements of this City being negotiated through the Hydro-Electric Power Commission was fully endorsed by the results of the vote on Hydro By-Law submitted to the ratepayers of this City on the 1st of January, 1917.

"AND WHEREAS, an agreement sufficiently broad and general in its application to permit your Commission making the best possible arrangement for this City was signed by the Executive Officials of this City, and forwarded to you in April, 1917.

"AND WHEREAS, the total amount of power now purchased through the Hydro-Electric Power Commission in addition to our own Current River Supply is 4,100 H.P. and before December, 1918, owing to additional elevators building, we more than expect our requirements through the Hydro-Electric Power Commission to exceed 5,000 H.P., the maximum possible under our old contract.

"AND WHEREAS, our existing contract expires in April, 1920, making the time for the construction of a new development, if such is necessary, none too long for satisfactory completion of such construction.

"BE IT RESOLVED, that the attention of the Hydro-Electric Power Commission be again drawn to this very important question of future power supply and the critical situation which is liable to develop and over which we have no control, unless immediate and satisfactory arrangements are consummated forthwith, whereby such supply as embodied in the above-mentioned agreement can be fully and finally secured."

As this matter is of vital importance, we hope to have at least some information as to the progress being made to assure our various industries their future supply of power, and awaiting the favour of your reply, we are,

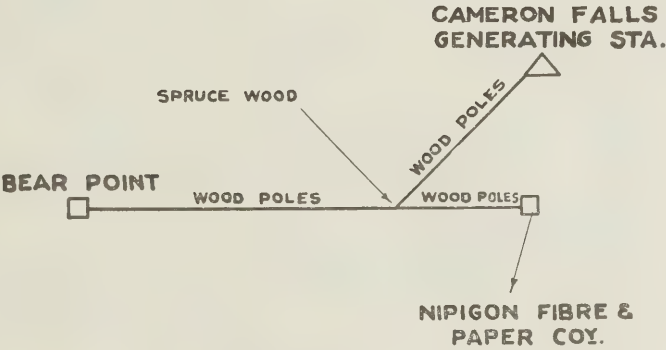
Yours faithfully,

PUBLIC UTILITIES COMMISSION, CHAIRMAN.

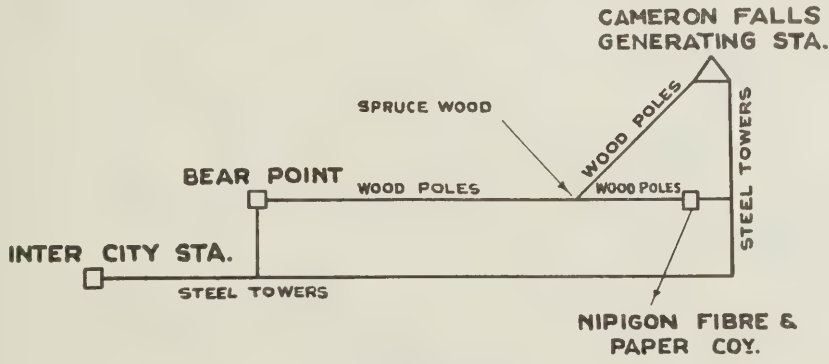
DETAILS OF OPERATION AND FIXED CHARGES

NIPIGON SYSTEM

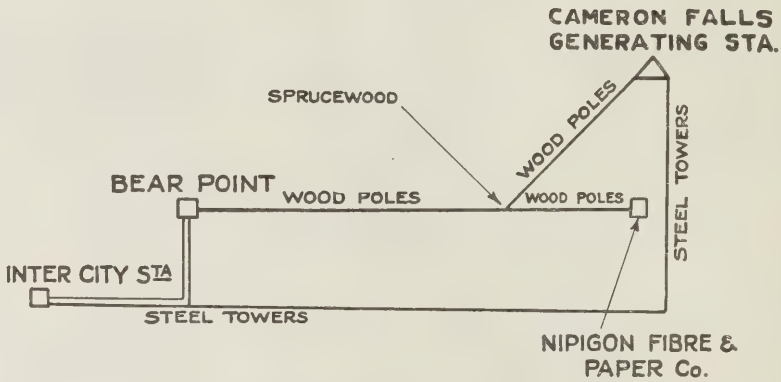
Year	Operation	Mainten- ance	Adminis- tration	Water Rent	Total	Interest	Sinking Fund	Conti- gencies	Depre- ciation	Total	Operation and Fixed Charges Grand Total
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1922.....	40,000.00	12,000.00	15,000.00	6,000.00	73,000.00	326,100.00	nil.	3,000.00	45,833.68	374,933.68	447,933.68
1923.....	40,000.00	12,000.00	15,000.00	12,500.00	79,500.00	326,100.00	nil.	6,250.00	45,833.70	378,183.70	457,683.70
1924.....	54,000.00	25,480.00	22,750.00	18,750.00	120,980.00	457,500.00	nil.	9,375.00	83,695.00	550,570.00	671,550.00
1925.....	55,500.00	31,800.00	23,000.00	25,000.00	135,300.00	502,800.00	nil.	12,500.00	97,540.00	612,840.00	748,140.00
1926.....	61,000.00	37,000.00	23,000.00	30,000.00	151,000.00	583,600.00	65,220.00	15,000.00	114,820.00	778,640.00	929,640.00
1927.....	62,000.00	43,500.00	23,900.00	32,500.00	161,900.00	643,500.00	65,220.00	16,250.00	133,600.00	858,570.00	1,020,470.00
1928.....	62,000.00	43,500.00	23,900.00	32,500.00	161,900.00	643,500.00	65,220.00	16,250.00	133,600.00	858,570.00	1,020,470.00
1929.....	62,000.00	46,500.00	28,650.00	37,500.00	174,650.00	650,900.00	91,500.00	18,750.00	138,350.00	899,500.00	1,074,150.00
1930.....	62,000.00	46,500.00	28,650.00	37,500.00	174,650.00	650,900.00	100,560.00	18,750.00	138,350.00	908,560.00	1,083,210.00
1931.....	.....	.....	.....	.....	.....	.....	117,180.00	.....	.....	.....	1,099,830.00
1932.....	.....	.....	.....	.....	.....	.....	128,700.00	.....	.....	.....	1,111,350.00
1933.....	.....	.....	.....	.....	.....	.....	128,700.00	.....	.....	.....	1,111,350.00
1934.....	.....	.....	.....	.....	.....	.....	130,000.00	.....	.....	.....	1,112,650.00
1935.....	.....	.....	.....	.....	.....	.....	130,000.00	.....	.....	.....	1,112,650.00



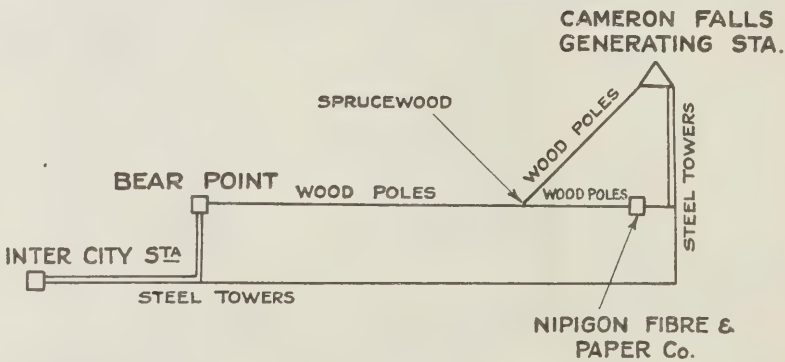
12,000 AND 25,000 H.P.



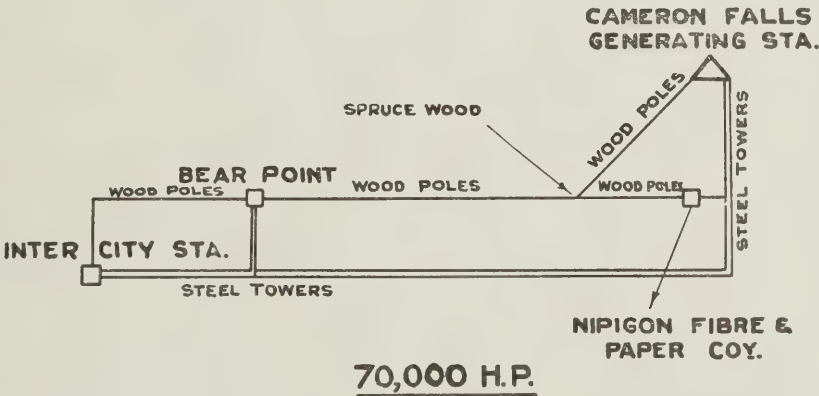
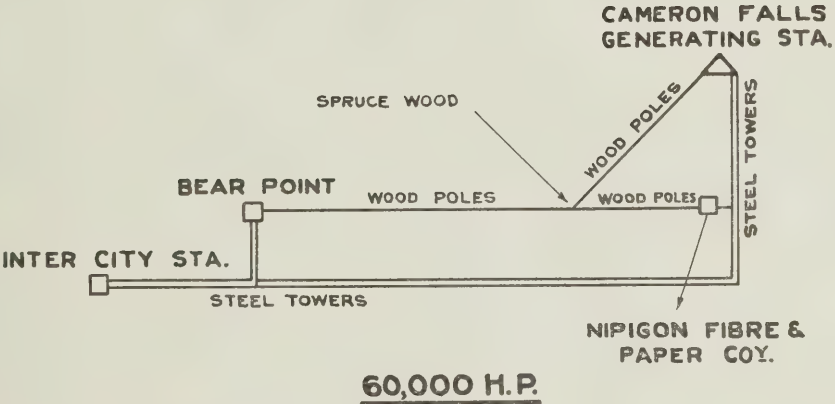
30,000 H.P.



40,000 H.P.



50,000 H.P.



DIVERSITY—NIAGARA SYSTEM

In regard to the diversity on the Niagara System, I give below approximate average figures for the last four (4) years:

1918—14%
1919— 5%
1920— 2%
1921— 2%

The above figures were derived from the sum of the power purchased and the sum of the power sold, and do not take into consideration the system losses.

After a personal conference with Mr. Gregory, it was decided that Mr. Gaby's reply dated August 28th, 1922, should be transcribed and incorporated into one volume prepared in multiple for the individual use of the Commissioners, and this volume has been accordingly completed.

WALTER J. FRANCIS,

Toronto, September 2nd 1922.

Consulting Engineer.

